The Builder.

VOL. LXXIX., No. 2997. JULY 14, 1900.

ILLUSTRATIONS.

Liverpool Dock Offices Competition: First Premiated Design.—Messrs. Briggs & Wolstenholme, FF.R.I.B.A., F. B. Hobbs, A.R.I.B.A., and Arnold Thornely, A.R.I.B.A., Architects ..... *Two Double-Page Ink-Photos.*

Old Bailey Sessions House Competition: Design Submitted by Mr. F. T. Baggallay, F.R.I.B.A. ..... *Two Double-Page Ink-Photos.*

Blocks in Text.

Sketch Section of a Paris Sewer of the Sixteenth Century ..... Page 29
Sketch Section of a Paris Sewer of the Present Day ..... „ 29
Suggested Plan for New War Office, Incorporating the present Banqueting Hall and Central with Horse Guards ..... Page 33

CONTENTS.

Portland Cement 25
Notes 27
The Municipal Pavilion at the Paris Exhibition 29
Egyptian Antiquities at University College 30
Leicester Infirmary Competition 30
Congress of Archæological Societies 31
Competitions 31
Magazines and Reviews 32
An Improved Method of Timber Preservation 33
Suggested Plan for New War Office Central with Horse Guards 33
The London County Council 34
Applications under the 1894 Building Act 34
London Building Act, 1894 35
Archæological Societies 35
Architectural Societies 37
Illustrations:—
Proposed New Dock Offices, Liverpool 36
Competition Design for Old Bailey Sessions House 36
Books:—
Sydney Wright's "The Law of Landlord and Tenant"; Sir Henry Roscoe's "Inorganic Chemistry for Advanced Students"; G. F. Charnock's Exercises in Graphic Statics, with Examples of its Application to Practical Designing of Constructional Ironwork"; Thomas Newbigging's "Handbook for Gas Engineers and Managers"; "Rownson's Iron Merchant's Tables and Memoranda, Weights and Measures, &c."; "The Practical Engineer Pocket Book for 1899"; M. B. Cotsworth's "Railway and Timber Trades' Measurer and Calculator" 37
Books Received 37
Trade Catalogues 38
The Student's Column.—Lessons in Modern Electrical Engineering.—2 38
Obituary 39
General Building News 39
Sanitary and Engineering News 40
Foreign 40
Miscellaneous 41
Capital and Labour 41
Legal:—
Action for Injuries 41
Recent Patents 41
Meetings 42
Some Recent Sales of Property 42
Prices Current of Materials 43

Portland Cement.

ALTHOUGH the use of Portland cement is increasing to such an enormous extent, we believe that many architects who have to make use of it are still far from fully understanding its characteristics and the points it is necessary to observe in order to do satisfactory work with it.

Probably the best way to describe Portland cement would be to call it a tempered lime, the word tempered in this case meaning the adjustment of its active or cementitious properties to a certain fixed point, to give a certain result. Portland cement of a good quality consists of from 61 to 63 per cent. of lime, the most important of the other component parts being silica and alumina, the proportion of the two latter having a certain effect on the setting time; and the proportion of lime governing the strength and soundness. In certain cases (which, however, are very rarely met with) a natural formation is found, approximating to what is required for manufacturing good cement. Unfortunately, as a rule, the proportion of carbonate of lime varies to such an extent, according to its level and position in the quarry, that it is practically impossible to obtain a regular good quality of cement without the ordinary adjustment of proportions, as described later. If it were possible, such cement could be made much cheaper. In one district in Belgium a large quantity of cement is made from such a deposit, which sometimes may be of good quality, and at other times is very inferior.

Where the proportion of lime is not just what is wanted, the usual way is to get a limestone as pure as possible; that is to say, containing as little as possible outside of the lime and carbonic acid, and reducing the proportion of lime down to that necessary by the admixture of a suitable earth or clay. Probably the ideal materials are those used by the manufacturers of cement on the Thames and Medway, viz., chalk, which exists in practically unlimited quantities in Kent, Essex, Sussex, &c.—this contains 98 or 99 per cent. of carbonate of lime, and is soft and easily reduced by washing—and clay, which is dug up from the marshes in the lower reaches of the Medway. This has been brought down by the river and precipitated there. The presence of these two ingredients comparatively close together has led to the result that some three-fifths of the entire output of cement made in this country is manufactured in this district; this three-fifths amounting to between 1½ and 2 million tons of cement per year. In other parts of the country, where the chalk and clay do not exist, a limestone is used, mixed with suitable earth or clay from natural beds. In other parts again, such as in the North of England, chalk is imported from the South-country chalkfields, and mixed with a local clay, the disadvantage of having to pay carriage on the chalk being met, more or less, by the advantage of cheapened fuel. Deposits of limestone exist there, but they are not suitable for cement-making, as a rule.

With the ordinary South-country material the chalk and clay are weighed into what is called a washmill. This washmill is simply a circular tank from 14 ft. to 20 ft. in diameter, according to the quantity of material to be dealt with, and some 4 ft. to 6 ft. deep. It is fitted with a framework revolving on a central pier, to which are suspended by chains heavy harrows, travelling round and round in the washmill, through the material, mixing it altogether and with water, added in such a quantity as to bring the mixture to about the consistency of treacle. This water amounts to about 35 or 40 per cent. of the whole. It may here be mentioned that this wet method of mixing is, with chalk, practically imperative, in order to get rid of the flint which is always present, more or less, with the white chalk most commonly used. With limestones not containing flints, as will be explained later, a different method of mixing is used, in which water is not introduced.

One of the most important points a cement manufacturer has to watch is the putting into the washmill of the right proportions of the raw materials to give, when the cement is finished, the proper proportion of lime. In the old times, before cement tests were so high as at present, and when the margin between the cement manufactured and the cement that would blow was therefore greater, it was the usual practice to roughly measure the raw materials into the washmill with barrows. However, at the present time the cement has, in order to pass the usual tests, to contain a percentage of lime so near to the percentage at which the cement would be liable to crack and be unsound that, if the manufacturer wishes to make a reliable cement, the two raw materials must be most carefully weighed in. In other words, if the rest of the process of the manufacture is properly carried out, and the two raw materials are suitable, and carefully weighed in in such proportions as to give in the finished cement the proper proportion of lime, the cement *must be* of satisfactory quality. On the other hand, if the raw materials are not mixed in this proper proportion, nothing can be done later in the process to correct it, and the result will be an inferior cement, and probably unsound. When the mixture in the washmill is reduced small enough, it passes through a grating and is then ground through millstones. This grinding serves two purposes: it not only reduces all the chalk to such a size that the necessary intimate mixture may take place with the clay, but also assists this mixing and makes it more regular. This slurry, as it is then called, is ready to be dried and burned. In the ordinary way it is dried by being placed upon floors over which, or under and over which, the waste heat from the kilns, or heat from special furnaces or coke ovens, is passed. The slurry, or as it is also generally known when dried, slip, is then ready for burning, and is in thick, irregularly shaped lumps, mixed with more or less small.

Where limestone is used instead of chalk, as mentioned before, the mixture is not mixed with water. The raw materials are ground, either separately and then mixed, or ground and mixed in the same operation, both being dried if necessary beforehand. Care is, of course, taken, the same as in the wet process, to have the proper proportions. This mixture has then sufficient water added to make it hold together, and it is pressed into bricks. These bricks are then generally dried, in modern works, in a tunnel dryer, such as is now ordinarily used in modern brickworks. In the two modern cement kilns described later the drying of the bricks

is not necessary—an additional point of economy in these kilns.

One other system of drying and burning in one operation is just being introduced into this country from America, where it has proved fairly successful on their material. This consists of a cylinder varying from 80 to 100 ft. long, and up to 6 ft. diameter. It is set with one end lower than the other and is capable of being slowly rotated. The slurry is pumped in at the high end, and as the cylinder rotates gravitates naturally to the lower end. Here it drops out, having been gradually dried and burned on its way. Heated gases, either from sprayed coal or from a jet of producer gas, are admitted at the lower end and travel through to the other. This system at first sight appears very much simpler and cheaper than the ordinary method of drying and burning, and it may prove to be so. It has not, however, as yet been used on English works, and its success and economy in dealing with English slurry is very problematical. It has, amongst others, one great advantage, viz., that although there are some differences in detail, the principle of it is very old, and the patent that covered it having long since expired, any manufacturer can use it without payment of royalty. There are some disadvantages that more or less cancel the apparent advantages. For instance, it is stated that cement burned by this rotary kiln will not stand one of the tests now often stipulated for, viz., the hot-water test, in which the cement, after being gauged, is placed and kept in hot water for a certain time, and must not show signs of cracking. Again, the slurry has to be much finer, necessitating probably a second grinding, which means extra cost. If fired with sprayed coal, this coal has to be dried and ground very fine, again entailing extra cost.

The next operation is the burning, which has for its object, principally, the driving off of the carbonic acid that is in combination with the lime. The slip (or bricks) has to be brought to such a temperature that, although not melted to a fluid, it is in a semi-vitrified or plastic condition, as, when burnt, the resulting clinker is much altered, generally, from the shape and size in which it entered the kiln; although at times, however, bricks do come through the kiln very little altered. That this point of temperature is absolutely necessary for a good quality is proved by the fact that pieces of the slip that are not sufficiently burned (of which there is nearly always a certain proportion, more or less, in each kiln) are practically unaltered in shape. For the highest quality of cement it is indispensable that there should not be any of this underburnt slip, as although it quickens the setting of the cement, yet if the proportion of lime be high, or should there be any particles of chalk comparatively large in this underburnt slip, the cement will be more or less unsound and inclined to crack, while if nothing but thoroughly burnt clinker is used, this danger is not so great. In making high-class cement particular care is taken to have all such half-burnt portions picked out.

The ordinary kiln used in England during the last few years consists of a chamber of varying form, built of brick, and lined with fire-brick. The slip is placed in this with alternate layers of coke, and, when full, is lighted. In some cases the kiln is allowed to burn itself right out without being touched. After cooling, the clinker is drawn and the kiln loaded again, &c., while in others, as it burns and shrinks in the kiln, other layers of material and fuel are placed on it before it is allowed to die out and cool ready to be drawn. At the present moment, however, the question of the burning of cement is demanding the time and attention of cement manufacturers to a very large and unusual extent. Coke is getting so scarce and difficult to obtain, except at very greatly enhanced prices, that it would seem that other systems in which less coke is used, or in which it is possible to substitute coal wholly or partly for it, will have to be adopted.

There are two new patent kilns that are working successfully on British material, and consuming, approximately, one-half the proportion of fuel (which may be wholly or partly coal) of that used by the ordinary type; and as the first cost of these, even when the separate cost of drying plant is added, only amounts, approximately, to the same cost per ton output as the old system, this alteration in method does not so much affect manufacturers who are laying down new plant. To those, however, who have already works fitted up with the old plant, which practically has to be thrown away in substituting the new method, this question of alteration is a very grave one. That the alteration is judged to be necessary is proved by the fact that some of the manufacturers have already commenced to make it in spite of the great cost and loss it entails. The principal difference between the old method and the two kilns mentioned is that instead of burning the kiln right out, and cooling and drawing it empty each time, the burning of the kiln is continuous, these kilns having points in the construction and working (that are novel and patented) that make it possible for them to work successfully on this really old-fashioned principle. The economy in this system, as used in the new type of kiln, is probably due to the fact that the air is travelling up through the burnt clinker, cools that clinker, and is at the same time itself heated on its way to the fire zone, after leaving which, in the form of heated gases, it parts with the greater part of its heat to the material that is travelling downwards on its way to the fire zone, through which it passes on its way to the chimney, thus utilising a much larger proportion of the heat generated instead of wasting it as usual. That this is so is proved by the comparatively low temperature at which the gases reach the chimney, being so reduced that although the temperature must have been somewhere about 2,000 deg. Fahr. at the fire zone of the kiln, the hand may easily be held in the gases leaving it.

The clinker, on leaving the kiln, is ready for grinding. It consists of rough, angular lumps, varying from about 12 in. cube to mere dust. This clinker, so long as it is in a furnace clinker-like form, and thoroughly burnt, is practically inert, as, with the exception of the surface, it is not affected by water. Even if soaked in water and dried again, properly burnt clinker is little altered; in fact, if ground and tested after such wetting and drying, there would be very little difference from what it would have been if not so wetted. This is correct, whether the pieces are as they leave the kiln or reduced, so long as they are not in the form of flour. This proves that the cement that is ground to flour is the only cement that is properly and thoroughly active or cementitious, although, for the reason that follows, the smaller the residue, the more cementitious, as the proportion of surface or exterior to the interior is greater, and a larger proportion of the bulk is reached by the water, while the smaller the residue the closer it fits together. There have been numerous arguments as to the reason for the apparent inactivity of residue, but the correct one seems to be, firstly, that clinker, whether in the form of large lumps or small residue, is so dense, that in gauging it for testing the skin or surface only is acted upon by the water, the interior remaining untouched by it, and, therefore, remaining unaltered; and, secondly, that when in the form of residue the atoms or particles do not have that intimate contact, by reason of their ruggedness or angularity, that appears to be necessary to, as it were, make a continuous joint between each particle with the next, and there are spaces, however small, that impair the solidity, and therefore strength, of the sample.

The flour has one peculiarity, viz., that it it be gauged with water, put in a mould and tested in the usual way, neat, the tensile strain it will stand is stated to be very much lower than if gauged with its ordinary accompanying residue, and from this it may be assumed that, in order to get the best neat test out of a cement, the presence of some other inactive, but preferably angular and rugged, material is necessary. This in the ordinary cement is provided by the clinker that is not ground to flour, which in the ordinary present-day grinding amounts to 50 per cent. of the bulk or more. Further, if all this residue were taken away from the flour and replaced by the same percentage of a like angular material that was inert and not liable to disintegrate, there is every reason to suppose that the mixture would stand as good a test as the original cement. It is, of course, a matter of common knowledge that some small manufacturers are mixing with their cement Kentish rag, or slag, and one argument that has been used in the attempt to justify this addition of what is only an adulterant is, that with a certain percentage of such adulterant, the test the cement will stand is really about the same. The above may be the reason for this, provided the adulterant used is of a harmless kind chemically and provides some more of the angular residue needed as mentioned. A certain proportion of it will, however, in the grinding be reduced to an inert flour, the addition of which must reduce the proportion of lime to the whole, and, therefore, the test. It is, however, usual that cement that is going to have such an admixture with it should be washed in the first place with a larger proportion of carbonate of lime in order to make up for this reduction. It may, therefore, reasonably be supposed that, providing the adulterant is mixed regularly throughout the bulk and is a suitable material, cement made with such admixture may be practically equal in neat test to cement without it. There is, however, always one danger with cement washed with an extra high proportion of lime in order to mix with or carry off an inert material—viz., that if this adulterant is not mixed regularly throughout the whole, any of the cement that does not get its share will probably be

unsound and liable to crack. There is also naturally the feeling that a buyer has, that when he pays for cement he expects to get cement, and not cement mixed with a proportion of cheaper material, and for such a mixture he should pay less, according to the relative proportions. The question of the proportion of flour does, however, most certainly govern the amount of sand the cement will stand to give the strength wanted in the work.

There are a number of different ways of grinding cement, each one having its advantages and disadvantages, but these we need hardly go into in detail, as, so long as the cement is reduced and contains sufficient flour, it matters very little which grinder is used, except to the manufacturer, as a question of relative cost. That a large proportion of the cement at the ordinary fineness contains some 50 per cent. or more of residue which, through not being ground down to a flour, is comparatively inert, and has little more cementitious value than, for instance, sand, is proved by the fact that if briquettes that have been gauged, tested, and allowed to stand for a considerable period are ground up finely and, without any further burning, gauged up again, these briquettes will stand nearly as high a test as the original briquettes. This proves that the original gauging has not used up all the cementitious part of the cement, and that that unused part has been, when the original briquettes were made, unaffected by the water, and yet has been put by the second grinding into such a form as to be rendered active by the second gauging, the reason for which we have given earlier when dealing with the inactivity of residue.

From these facts it may be concluded that the present system of testing fineness does not show the comparative cementitious value of the cement. This method, it may be explained, is to take a certain quantity of cement and sift it through a sieve containing a given number of holes to the square inch, thus arriving at the proportion of residue that will not pass through that sieve. But even if a very fine sieve is used it still allows to pass through it a varying proportion of cement that is nearly as inert and useless, from the point of view of hardening or cementing, as the residue kept back by it. The result of the test has merely shown the proportion of the cement that is too large to go through that particular sieve. This knowledge is worth little in the estimation of the cementitious value of the cement, but seeing that, until just lately, there has been no simple method of estimating the amount of actual flour, it has been taken as a rough guide, although the fact of there being a certain proportion of the cement fine enough to go through any particular sieve cannot be accepted as a proof that it contains a certain proportion of flour. Each of the different classes of grinding machines leaves a different proportion of unfloured cement, even if the proportion left on a given sieve is the same. Even with a knowledge of the proportion of actual flour, there is one point to be noted, viz., that under-burnt cement is easier ground to a flour than properly burned cement, which might be a temptation to leave in more of this under-burnt in order to increase the proportion of flour, but this would show itself when the cement is tested for weight or specific gravity, as under-burnt cement is much lighter than properly burnt cement.

To sum up, good cement consists of suitable materials mixed finely and intimately in right proportions, burned to the proper point, and ground to contain the maximum of flour, without adulteration in any shape or form.

NOTES.

The Hellenic Society.

THE annual meeting of the Hellenic Society, held at the rooms of the Society of Antiquaries on Thursday last week, derived special interest from the account given by Mr. Arthur Evans of the discoveries made by Mr. Hogarth and himself at Cnossus, a site which for many years past has been believed to be worth exploration, but from which archæologists have been deterred by local opposition. This has now been overcome, and Mr. Evans has been able to report a series of finds of an interest even beyond what was expected. The remains of a large palace of a very early civilisation have been disinterred. Among other points of interest were a series of chambers, apparently store-houses or magazines, containing a number of large jars standing on a pavement *in situ;* these jars, of which photographs were shown, are of a finely curved shape and decorated mostly with a large and bold zig-zag ornament round the middle. Underneath one of the floors, at two different depths, were two stone cists lined with lead. A considerable quantity of decorative fresco-painting was discovered, illustrating flowers fishes &c., and a number of paintings of men and women, the sexes being distinguished not only by costume but by the curious conventionalism of representing all the men with brown skins and the women with white. (Possibly the difference in the mode of life of the men and women may really have given a distinctive colouring to the skin.) The costumes of some of the female figures were characteristically described by the director of the French school as "almost Parisian" in style. In connexion with the northern propylæa were found the remains of a large figure of a bull, ("suggesting the Minotaur," said Mr. Evans), of which the head and a large part of the body had been brought out—a photograph of the head was shown. Perhaps the most interesting detail of all was the throne-room with its stone chair with a decoratively-treated back, still *in situ*, and a long stone bench on each side of it; a photograph of this was also exhibited, as well as a plan of the remains, and photographs of different portions of the excavations and of many other objects found in them. Mr. Evans mentioned that beneath the level of these remains was a considerable stratum of neolithic remains. It is to be hoped that funds will be found for continuing the exploration of a site of such exceptional interest. Sir W. Richmond, in seconding the adoption of the annual report, mentioned that he had the other day been promised a subscription by one gentleman of 250*l.* towards the prosecution of the researches at Cnossus, and that he himself would be glad to go out and make copies of the paintings if the expenses of his journey out and home could be defrayed by the Society. In any other country the Government would vote money to assist in such an excavation; but we suppose it is hopeless to expect this in England.

The Architectural Museum.

THE annual meeting of the Royal Architectural Museum and Westminster School of Art will be held at the Museum on Friday, the 20th, at 4 p.m., when Mr. Emerson, the President of the Institute of British Architects, will be nominated as President of the Architectural Museum in place of the late Duke of Westminster, and Messrs. Aston Webb, John Belcher, A.R.A., G. F. Bodley, A.R.A., and Geo. Frampton, A.R.A., will be nominated as Vice-Presidents. Mr. Aston Webb will take the chair, and we hope that there will be a good attendance of architects, both in support of Mr. Webb and of the institution itself. The Museum has laboured under two disadvantages; it is in a rather out-of-the-way situation, where people are not likely to find it unless they know of it beforehand; and its large collection of casts was made during the enthusiasm of the Gothic revival—the Museum was, in fact, essentially a Gothic revival scheme—and consequently in the present state of architectural tendencies the collection of casts is felt to be too one-sided, and does not represent architectural detail in an all-round manner. Nevertheless, it is the only large collection of casts of architectural detail to be found in London, and the object ought to be to take advantage of what already exists there, and to supplement it with a collection of casts of detail of the Classic and Renaissance schools, so as to give it a more comprehensive character. The one half of an admirable collection is already there; we want to see steps taken to supply the other half. Whether this can be done in the present building is perhaps a question; if not, it is time to consider whether the building can be enlarged, or whether a new home can be found which will take the present collection and a large future addition to it, to be made by degrees as casts can be acquired. It is certainly worth while seriously to consider the possibility of doing this. A large collection of architectural casts representing the best detail of all schools would be of the highest value, and we ought to be grateful to those who took at all events such an important step in that direction by forming the collection of casts now at Tufton-street.

The L.C.C. Works Department.

AT the last meeting of the London County Council the question of the Works Department came up again in regard to the old grievance of excess of expenditure over estimate, which during the past half-year has amounted to nearly 20,000*l.* The detailed reports furnish legitimate explanations of some portion of this expenditure, such as rise of prices; impossibility of getting some materials, such as cement, fast enough supplied to carry on work at a profitable rate, &c.; but there still remains a good deal which can only be accounted for by inefficient management. The chief excess has been in the Housing Department and in connexion with some engineering work carried on at the Crossness outfall. In the latter work—foundations for a new engine-house, &c.—the estimate was 34,617*l.* 6s. 8d., and the cost exceeded this by 16,279*l.* 12s. 10d., or about 47 per cent. The works manager states that the principal cause of this excess was the insufficiency of the calculated prices. He says—

"The work was accepted by the late manager in June, 1896, but I am very decidedly of opinion that

he should have reported the estimate insufficient. The cost of pumping was undoubtedly miscalculated (the actual cost was about 8,095*l.*), due probably to the late manager looking upon the bills of quantities as containing every individual item of expenditure as in architectural works, instead of engineers' quantities and modes of measurement, giving only general items, each including many contingencies. An example of this is found in the items for making the various connexions to existing sewers, &c., which are in constant use, for which the prices allowed are absurdly inadequate, especially bearing in mind the frequent flooding of the work whilst these connexions were being made.

The work was commenced in August, 1896, before I took charge of the Department, and several thousands of pounds had been expended. Instead of the works being forwarded, it took something like three months to rectify the errors in the mode of procedure adopted. Sheds and sidings had to be removed from the site of excavations and reconstructed, and a new sump, greatly enlarged, had to be sunk. The excavation for the engine-house foundations had been commenced, but timbered in such a manner that it had to be altered before it was possible to get timbers down for the lower depths of the excavation, &c. This serious state of things, due probably to the disorganisation of the Department at that time, without doubt added largely to the cost of the work, and I consider that little of the money expended up to that time had been of any assistance in the carrying out of the work."

This certainly seems to show that not only were the prices miscalculated, but that a good deal of blundering was made over the work in its initial stage. This and other reports tend, so far, to justify the conclusion of a member of the Council that it was time to give way and admit that the Works Department was a failure, and put future work out to contract.

Trade Unionism and Work.

THE sixteenth of the able communications on "American Engineering Competition" which are being published in the *Times*, which appeared on Monday last, draws a dramatic contrast between the conditions under which work is carried on in England and America. The writer has collected a number of delightful statistics in regard to the system of doing as little work as possible for your wage, which seems to be the ideal of the English trades-unionist. We may quote the following :—

"An apprentice was 'interviewed' because he machined three stamp millheads a day, whilst the society men did but two, and he had to give up the work. Another firm had a society man turning pulleys at 35s. a week, taking 26½ hours. Afterwards, at the same lathe, another man, not a society turner, at 24s. a week turned out similar pulleys in 22½ hours. Another firm found it took a society man 190 hours to plane a lathe bed. A promoted labourer under a non-union foreman did the work in 135 hours. A Glasgow firm gave instances of saving in time on machine work after the society men had gone out on strike and apprentices had been put on. In one class of work the saving was 50 per cent., in another 35 per cent., in another 30 per cent., in another 50 per cent., in another 18 per cent., in another 10 per cent., and in another 17 per cent. In another shop a journeyman and five labourers took 40 days to erect three cranes, whilst a pupil and the same five labourers erected three similar cranes in 27 days."

The writer goes on to say that in nearly every engineering factory which he visited in the United States he found the piecework system followed to the fullest extent possible, and that "its effect is remarkable. The men are spurred by ambition; they feel the reward of exertion. The more they make, the more they want to make." In some instances day wages are preferred by the employers, but in that case the greatest care is taken in organising the staff of foremen; and it is significantly remarked that the American foreman is never a "men's foreman," he is an employer's foreman. There is no uniformity of payment such as is enforced by trades-union rules in England; "a man gets just what he is worth." The contrast is one which ought to set us thinking.

The Workmen's Compensation Act.

THE case of Pattinson & Son *v.* Stevenson, briefly reported in our legal column last week, has raised a very important question in regard to the capitalised redemption of weekly sums payable to a workman by his employers in respect of injury from an accident. It would have been desirable to know what the Appeal Court said upon the question as to whether there was any limit to the sum to be paid for the redemption of a weekly sum payable as compensation, and also as to the deductions which the learned judge of the county court had made and specified; but it must, of course, be assumed that they concurred as to the principle, although perhaps not as to the amount. It may, indeed, be suggested that the learned judge of the county court and the Court of Appeal might have taken into consideration the question of a further deduction, viz., in respect of the possible insolvency of an employer and the difficulty of following his assets after his decease; but this would apparently involve an impossible inquiry, and therefore could not be taken into account. Employers and workmen, at all events, will learn from all this a great deal as to the mode in which such applications may be dealt with by the courts of law, and it may be assumed that in future masters and also insurers will always endeavour to effect the redemption of the weekly sums payable as compensation by agreement with the workmen, and will rarely have recourse to arbitration under the Workmen's Compensation Act.

Newcastle House, Lincoln's Inn Fields.

ON the 26th inst. will be offered for sale at auction the freehold property consisting of No. 67, Lincoln's Inn-fields, at the corner of Great Queen-street. The premises form the northern portion of Newcastle, or Powis, House, being the only house on the west side of Lincoln's Inn-fields that stands outside the limits of area as scheduled in the Act for the new street from High Holborn to the Strand. It was built in the year 1686 for William Herbert, Marquis of Powis, by—according to Walpole—William Winde. Having become forfeited to the Crown by Lord Powis's attainder, the house was sold to John Holles, Duke of Newcastle, at whose death, in 1711, it passed to his nephew the Duke of Newcastle of George II.'s reign. Powis House had been occupied for a while by Lord Somers, and the Government at one time intended to vest it as an official residence or offices in the Lord Chancellor. Of late years No. 67 was occupied by the Society for Promoting Christian Knowledge, who have just celebrated the bicentenary of their foundation, and who removed thence to their new premises in Northumberland-avenue, erected after John Gibson's plans and designs, and illustrated in our number of October 18, 1879.

Harley House, St. Marylebone.

MESSRS. BOEHMER & GIBBS have been appointed architects for a large block of residential flats that are about to be built by, we gather, Mr. C. J. Hinsley, of George-street, Manchester-square, contractor, upon the site and grounds of Harley House, Marylebone-road. The house, which was built in the former half of the current century, was pulled down two or three weeks ago. It was occupied by the Queen of Oude when she visited England some years since, and was afterwards taken for a convent (Marie Réparatrice) of nuns, for whom a chapel was built on the east side of the house, and who have migrated to Priory Lodge, at Frognal, Hampstead. The grounds contained some fine trees, in which, until two or three years ago, was a rookery.

Mr. Arthur Hughes's Exhibition.

AT the Society of Fine Arts a room is filled with small paintings, chiefly landscapes, by that thoughtful and intellectual artist, Mr. Arthur Hughes, one of the last of the old Pre-Raphaelite band, or at least of those who were immediately influenced by it; though his works have always shown only the good qualities of the school—earnest attention to nature and careful and thoughtful painting—without its eccentricities or exaggerations. For many years those who visit the Royal Academy with a view to finding out what is best in it have been on the look-out for Mr. Hughes's painting (we regret that there is none this year), generally an allegorical or romantic subject treated with great originality and expression, though little understanded of the people; but it is rather a new interest to come across Mr. Hughes as a landscape painter. Here we have, however, a number of small and delicate landscapes full of bright sunlight, lawns and meadows gay and joyous in the light, seas in zones of blue and green and purple, as the cloud-shadows or other influences colour them, woods and streams, all treated equally with a view to general effect and to the truthful rendering of detail. These are landscapes quite out of the ordinary course of things; original and with a special beauty of their own. Among those which might be selected as the most interesting are "Corn by the Sea" (12), "Springtime" (18), a cliff scene by the sea; "Potato Harvest" (23), a little picture of work in a storm of rain, the horses' tails blowing in the wind; "Home with the Dawn" (29), a fishing fleet coming in, with its lights just paling in the dawn; "The Fisherman's Home" (44); "The Shepherd" (47), and "A Flowery Corner" (78), the two last specially delightful for their fine composition as well as other qualities. At the end of the room hangs the painter's fine triptych, "Viola d'Amore," exhibited some three or four years ago at the Academy, to the bewilderment of the average exhibition-goer. We are sorry to hear that this work is still on the painter's hands, nor has it been reproduced in any way. Unfortunately it is a class of picture that appeals only to a minority.

PUBLIC GARDENS, GREAT YARMOUTH.—The gardens and promenades adjacent to the Wellington Pier were opened on the 2nd inst. The gardens are 500 ft. long with a width of 200 ft., and contain a band-stand (not yet completed), and on the east side of the ground a glass shelter nearly 500 ft. long and between 20 and 30 ft. deep. The work was carried out under the direction of the Borough Surveyor, Mr. J. W. Cockrill.

THE MUNICIPAL PAVILION AT THE PARIS EXHIBITION.

THE Pavilion illustrating the work of the "Ville de Paris" at the present Exhibition is a much more important affair than that of the 1889 Exhibition, which, it may be remembered, was a comparatively small building placed on the axis of the Champ de Mars portion of the Exhibition. The Ville de Paris Pavilion of this year is a very large erection on the north bank of the Seine, close to the head of the Pont de l'Alma. It is constructed mainly of timber, but is very dignified in appearance, and it has appropriately been given some of the architectural proportions of the central portion of the Hôtel de Ville, so as to give a suggestion of its relation to the Municipal Government.

Within this Pavilion are illustrated, by drawings, photographs, and models, all the various classes of public works and public departments of the Paris Municipality. The first room we enter is that devoted to the Police Department, which need not detain us, except for some very interesting historical documents which are hung up, in the shape of printed official notices for the preservation of public order, issued during the early days of the Revolution, and which serve to bring home to one in a very realistic manner the turbulent state of the city in that time. The next rooms (marked "Domaine Departmentale") contain models or drawings of various departmental works. Among these is a model of the bridge at Suresnes, a very elegant steel bridge in three spans, noticeable for its simplicity of design and treatment—an exceedingly good specimen of engineering architecture. The Asylums Department (Service des Aliénés) is illustrated by a sectional model of a large asylum ward, and by a quantity of examples of work done by the inmates. All this seems very satisfactory; one feels less satisfaction with the bird's eye view of the Ecole Le Peletier de St. Farjean; a school with buildings and grounds all laid out in squares and crossing lines like a gridiron—about as uninteresting and uninviting an abode for youth as can well be imagined; but that is the inherent defect in the French school system, State or Municipal; the schools suggest prisons, and are totally destitute of that semi-domestic appearance which is fortunately to be found in so many English schools. It is in keeping with the whole French idea of government, which is a system of drilling individuals into subordination to a doctrinaire ideal, and is duly reflected by the buildings erected for educational purposes. In a sanitary and structural sense we have little doubt that French school buildings are better constructed and laid out for providing material health than the majority of English ones; but what about their effect on mental health and development?

Within this very varied "Domaine Departmentale" we may notice also a case containing a collection of objects of antiquity found in 1886 in a cemetery at Bry-sur-Marne—they include a number of simple ornaments, horseshoes, a hatchet, a large bit, &c.; reproductions of medallions modelled as official prizes in contests of music, gymnastics, shooting, &c., all of them very well designed and modelled, as may be expected; and a chart showing graphically the increase in population, since the commencement of the century, of the principal Communes in the Department of the Seine. The supposed stationary condition of population in France at present is at all events not illustrated in the Department of the Seine, if we are to take this diagram as evidence. St. Denis, for instance, possessed a population of 4,000 at the commencement of the century, and has now risen to 55,000, and many other of the Communes have increased in nearly the same proportion. Probably, however, the decrease or lack of increase in the population is to be perceived in the rural districts of France rather than in the towns and villages near Paris.

Coming through the outer range of galleries, we find the interior portion of the building laid out in a large central court surrounded by galleries on the upper level, with the staircases leading up to them treated very effectively as central features rising from the central part of the court. In this court are casts of some of the principal sculptures acquired by the Municipality for the adornment of the streets and squares of the city. On the wall at the upper end of the court is an immense map of the Department of the Seine, about 20 ft. square, and beneath it a large geometrical representation of the bridge over the Marne at Nogent-sur-Marne, a fine example of an iron bridge treated with great simplicity in one sweep of an arched girder, with no ornament but a symbolical fish cast on it in relief at each end, and a gracefully designed balustrade above. In the centre of the court is a large erection which looks like a huge drinking-fountain, but is exactly the reverse, as its basins contain water which you may not drink, being specimens of the untreated water from the principal sources of the Paris water-supply. Four basins contain respectively the water of the Vanne; of the Ourcq, a water of a very red tinge; of the Arve, greenish in tint (probably a chalk water), and of the dirty-brown water of the Seine, with the label "Absolument exclué de la consommation privée." A couple of little drinking-fountains close to supply the purified water as delivered for drinking; the object evidently is to give the public an object-lesson as to the care with which a paternal City Council prepares their drinking-water, but it is a superficial show from which one gets no information; some sections of the filtering-beds would have been more to the purpose. At the farther end of the building there are, however, some very elaborate and interesting models of the "Captage" of the water of the Vanne and of the Loing and Lunain; in the former the water bubbles up in the centre of a large circular artificial pond vaulted over and covered to a considerable thickness with a made soil banking overgrown with grass. Of more practical interest are the detail models of the great distributing sewer-pipe which takes a considerable portion of the Paris drainage to the filtration district at Achères. A section of this pipe, full size, shows that it is about 6 ft. in internal diameter and only about 4 in. in thickness; it is a construction of light circular hoops of iron on edge, tied together by a series of small iron bars running longitudinally, and the whole imbedded in about 4 in. thick of fine concrete; a very strong pipe-drain, but somewhat costly in make. A collection of the different sizes of pipe used in the Paris water-distribution is also shown here; the largest is about 4 ft. in diameter, with a "frette d'acier," a steel band about 3½ in. wide, ringing the pipe at every 2 ft. or thereabouts. In an adjoining room is shown a part model, part panorama, of what is called the "Parc d'Achères," the sewage park of Paris.

Among other engineering details and models in this part of the hall are sections of the Paris streets and sewers, including some sections of old Paris sewers which are of historical interest. A sewer made in the sixteenth century, and which was in use as late as 1840, shows a round-arched stone culvert with a wide and perfectly flat channel. A rather more scientific section, dating also from the sixteenth century, is formed as in the accompanying cut (fig. 1); this also was in use until near the middle of the present century. The

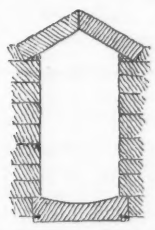


Fig. 1.—Sketch Section of a Paris Sewer of the Sixteenth Century.

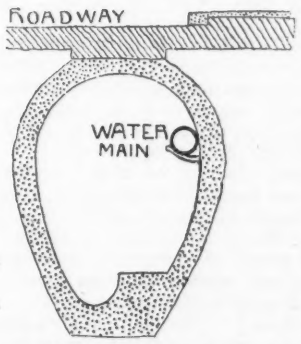


Fig. 2.—Sketch Section of a Paris Sewer of the Present Day.

approved section of Paris sewer of the present day is as sketched in fig. 2, the circular pipe on iron brackets carrying the water-supply. This system of carrying the water-pipes along the wall of the sewer is not modern; it was used in some of the old Paris sewers, of which sections are given, only it was carried not on metal brackets, but on a continuous course of masonry projecting from the sewer-wall just below the springing of the culvert-arch. In this portion of the Exhibition also is shown a large model of a lock on the Saint-Denis Canal, in which the water for filling the lock, instead of being introduced at one end and thereby producing a violent current, is poured into parallel sluices at each side of the lock-chamber, which it enters through openings formed at intervals along the whole length of the lock, so as to cause a steady vertical rise of the water at all parts of the lock. Among other things illustrated in the ground-floor rooms are the apparatus for meter-testing; the street-lamp system of Paris—the "tri-bec" lamp with the Auer burner, a form of mantle-burner; and examples of the materials used for paving in the Department, with statements of their co-efficient of wear. This exhibit, however, appeared in the 1889 Exhibition, when we gave some particulars as to the statistics of wear of the different stones.

In the upstairs galleries are found specimens of the work done by the boys and girls in the technical schools of the Department, which make a very good show. Among those more specially noticeable are those of the Diderot school of metal-working, and those of the "Ecole Boule," in which the design and execution of furniture and decorative textiles is taught. A model of the Rollin College impresses one with the conviction that the interior courtyards, entirely surrounded with buildings, are too small for proper hygienic conditions, in relation to the height of the buildings.

Towards the eastern end of the gallery (south side) is a small but interesting collection of old maps and views of Paris. The latest in date, "Paris in 1697," is described in the title as "Dressé sur les memoires de M. Jouvin de Rochefort, par N. de Fer, Géographe à Monseigneur le Dauphin." It is covered with remarks in a beautiful small written character, and embellished on the margins with small views of the fountains and bosquets of Versailles, then in their pristine splendour. Round the east end of the galleries are collected illustrations of various Municipal buildings; a great model of the new Sorbonne, 16 ft. long (this, we think, was in the 1889 Exhibition); M. Formigé's drawings of the Paris crematorium; photographs of the Sapeur-pompier barracks and of "Groupes Scolaires," including a building bearing the attractive title of "Ecole Maternelle," and looking, unhappily, like a kind of cross between a railway station and a gaol. There is nothing more disagreeably characteristic in modern French architecture than these forbidding and prison-like education buildings, from which all sentiment and feeling seems excluded.

A long gallery on the south side of the building contains a very curious and interesting collection of the artistic possessions of the Municipality. Among these are drawings of historical or topographical interest; a view, for instance, of the Champ de Mars on the day of National Federation (July 14, 1790). Among other water-colour views there is one of the theatre of the Tuileries under Louis XVI., apparently a built-up scene of Classic colonnades; the drawing is dated 1788; strange to think of this elaborate and costly piece of Royal amusement going on placidly the very year before the storm was to break over it. A drawing by Cochin shows the theatre of the Trianon at the performance of "Acis and Galatea," with the actresses on the stage in immense hoops. Another water-colour drawing gives us the Pont Neuf in the eighteenth century, showing that the semicircular balconies corbelled out over the piers were then carried up as covered half-domed shelters — probably removed because they were used for purposes not intended; an earlier drawing by Lespinasse gives a view up the Seine before the quays were built, with a wide beach bordering the river, and a bridge covered with lofty houses, like Old London Bridge, filling up the background. The Napoleonic period is recalled by a drawing of a "Projet" for the Rue de Rivoli with its arcades, dated 1808—for the Rue de Rivoli from the Place de la Concorde to the Tuileries was Napoléon's work, Haussmann only completed it eastward; by a model of

a

Napoléon's State carriage with the Imperial eagle seated on the draw-bar, and by the actual cradle presented for the King of Rome by the city of Paris—like the carriage, all gilded, and with the eagle seated on the end as if contemplating the son and heir. Among interesting portraitures is a bust of Bailly, astronomer and mayor of Paris at the outbreak of the Revolution; a very powerful bust of Mirabeau by Houdon; a profile portrait of Napoléon by Prud'hon, and Drolling's characteristic portrait of Isabey, wearing a great peaked cap and engaged in painting a miniature. In short, there is enough of historical and artistic interest in this one gallery to employ a whole afternoon.

Before quitting the Ville de Paris Pavilion we should notice downstairs, in a small room on the south side, near the entrance, the exhibition of the "Vieux Paris" Committee, consisting of a collection of objects found in Paris soil and in the bed of the Seine. These include a great variety of pottery of almost all dates; axes and spear-heads of the stone age; coins from the period of ancient Gaul to the present day, &c. On the wall of this room is hung a restoration or copy of an ancient tapestry-plan of Paris. This is a modern reproduction of an old plan of Paris, known as the plan "de la Tapisserie," which is said to have been executed in the year 1540, by order of Cardinal Louis de Bourbon, after cartoons by Jean Bourdichon, valet-de-chambre and painter to the king ("Peintre du Roi"). After having been for nearly two centuries in possession of the Guise family, it was acquired by the Municipality of Paris in 1737. It disappeared, somehow, a little before the Revolution; but there existed at the Hôtel de Ville a copy of it in water-colour, on nine sheets of paper. This, in its turn, was burned in the conflagration of 1871. A little before this, however, M. Destailleurs, a well-known collector, had several portions of it again copied in water-colour. These copies are preserved in the Municipal library, and there is also in the Bibliothèque Nationale an authentic drawing from the original tapestry made in 1690, a photogravure of which is given in the atlas of "Anciens Plans de Paris." There are also photographs of the Hôtel de Ville water-colour copy, taken before the war.

It is from these various sources that the present reproduction in tapestry, of the estimated size of the original (4·70 by 3·35 mètres), has been made by Mmes. Lépine, who have lent it for exhibition on this occasion.

EGYPTIAN ANTIQUITIES AT UNIVERSITY COLLEGE.

THE enterprise of English archæological societies working in Egypt was splendidly rewarded last winter, and the results—after the usual toll had been levied upon them by the Gizeh Museum—are on view throughout the month of July at University College. The site of the temple and cemetery of Abydos was secured last year for the Egypt Exploration Fund, and the Egyptian Research Account also worked on part of this concession. Probably several seasons will be profitably spent there. Though it has been plundered of antiquities for nearly a century, it is still far from exhausted, and scientific work under Professor Petrie's direction finds the gleanings of greater scientific value than the harvest ever was to previous excavators.

The importance of Abydos lies partly in its being the funerary city of the first dynasties in Egypt, attached to their capital at This, partly in its having been the chief centre in Upper Egypt of the worship of the great god Osiris, the king of the dead. Thus, while for the later periods its remains are inferior only to those of the great capitals Thebes and Memphis, it is the chief, nay, almost the only source of monuments of the earliest times of the monarchy, the date of which may lie anywhere between 3000 and 5000 B.C. Three or four years ago Egyptologists were disposed to treat the first two dynasties as mythical; but Amélineau, the last *concessionaire* of Abydos, discovered royal tombs and remains on which German scholars recognised names of kings of the First Dynasty. Now, by regular excavation of several of these tombs, Professor Petrie has established the succession of the kings and thrown much light on the civilisation and arts of that remote period. He finds that as yet pyramids were undreamt of. The royal tombs consist of large underground chambers with massive, crude brick walls, panelled on the outside, the inside lined, roofed, and floored with wood. The plans have been carefully recovered by Professor Petrie himself, and show considerable development from the beginning to the end of the dynasty. They can be studied in copies hung on the walls of the room, and still better in the memoir on the tombs which has been published to coincide with the exhibition. The burial chamber was more or less surrounded by store chambers for provisions, and beyond these again were the graves of the courtiers.

The royal tombs had all been destroyed at a late period by fire. The contents were naturally found, if at all, only in a very imperfect state, but they are of great interest. Among them were endless fragments of jars in pottery, in rock crystal, and in other hard or soft stones. Many of them bore the royal titles or other inscriptions, and many had plaster caps sealed with cylinder seals. The art of writing was already highly developed and, in fact, displays all the employments of signs that are found later in Egypt. It is, however, stiff and clumsy, and the occasional examples of cursive signs are very different from the fluent writing of 2000 B.C. There are many remarkable pieces of engraved ivory. One is well carved in the form of an Asiatic prisoner. Some of the hieroglyphic signs engraved on hard stone are exquisite; but on the whole the quality of the workmanship in these remains seems to fall below that displayed in the Prehistoric Period. The few scenes that are represented, and the longer pictorial inscriptions, though royal, are decidedly muddled and careless, without any attempt at artistic grouping. Yet there are indications that better style existed at this period. There is an improvement also observable at the end of the dynasty, paving the way for the careful and beautifully executed designs of the Fourth Dynasty. But at Hieraconpolis Quibell found very neat scenes that may be earlier than the First Dynasty.

Besides these earliest remains, the most interesting of all scientifically, there is a wonderful display of stelæ, statuettes, vases, jewellery, &c., of the Twelfth and Eighteenth Dynasties and subsequent periods found by Messrs. MacIver, Mace, and Garstang, such as has seldom or never been seen before at these exhibitions. For the first time also the plan of a temple of the Twelfth Dynasty has been secured. This temple was built chiefly of brick with columns in the façade, stonework at the corners of the main building, and numerous brick chambers attached to it. There is also exhibited an octagonal limestone column of the same age inscribed with titles. It probably supported the roof of a tomb-chamber.

An excellent little interleaved catalogue serves as a guide to the whole exhibition, which includes some drawings and tracings of remarkable scenes in rock-tombs of the old kingdom, made for the "Archæological Survey" by Mr. Davies.

LEICESTER INFIRMARY COMPETITION.

WE last week announced the result of this competition and the names of the three premiated competitors. The drawings have been exhibited during the past week at the Poor Law Offices, and after careful examination of them we are quite prepared to endorse the opinion of the assessor, Mr. W. H. Ward, of Birmingham, that the drawings on the whole are not of so high a standard of excellence as the importance of the competition would naturally lead one to expect. We also thoroughly agree with Mr. Ward that the first premiated design is immeasurably superior to any other exhibited, as, indeed, might almost be taken for granted when one remembers the very large experience in buildings of this character that has fallen to the lot of Messrs. Giles, Gough, & Trollope.

The site, situated on the boundary of the borough of Leicester at Evington, is of irregular form, and with levels varying from 283 ft. to 336 ft. above the ordnance datum. As the highest point of Leicester market-place is 207 ft., it will be seen that the guardians have chosen a fairly well-elevated position for their new infirmary. The site contains about sixty-three acres, and, as this is far more than is required for the infirmary only, competitors were instructed to leave a portion of the site suitable for the erection of a workhouse in the future, for which, under a proper disposition, there is ample space. Provision was also to be made for future extension of the required infirmary itself.

The first premiated design is far superior to any other in the disposition of the infirmary buildings on the site—being cleverly arranged so that while sufficient space is left for the future workhouse in perhaps the most suitable position on the land, the infirmary buildings occupy almost a level situation on the highest part of the ground, and at same time have a considerable acreage open and unoccupied towards the south. The blocks for imbeciles and epileptic patients are also well situated, both as regards their elevation and isolation, whilst at the same time being sufficiently easy of access. Altogether it is difficult to conceive how any better block plan of the establishment could be devised; it certainly, as we have already indicated, is far superior to that of any other competitor. In the arrangement of the infirmary itself it is almost enough to say that it is worthy of the authors' experience and reputation. The main building consists of an administration block, from which a central main corridor running east by north and west by south gives access on each side to receiving wards and two double pavilions.

The administration block is admirably arranged with the commissariat department, comprising stewards' stores, kitchen and adjuncts, and servants' mess-rooms on the north of the main corridor, and the medical, nursing, and managerial departments round a large open quadrangle on the south of the main corridor. In the centre of this quadrangle is the operating-room, a position which differs in principle from that adopted by other competitors, and although, perhaps, open to the objection that it necessitates a slightly longer journey for a patient from the wards, possessing nevertheless the counterbalancing advantages of being isolated, quiet, and exceedingly convenient for the medical staff — advantages which amply compensate for the slight extra distance to be traversed by the patient. In this quadrangular group of buildings the entrance offices and visitors'-room are on the south side, the medical department on the west, with the dispensary adjoining the main corridor, and the nurses and matrons' sitting-rooms and mess-rooms on the east. On the upper floor is provided ample accommodation for the staff.

As we have already noticed, the receiving-wards are on the main corridor, with the store-room for patients' clothes on the north side; this, we think, is a far superior arrangement to that of an isolated block of receiving wards near the entrance, which is adopted by the generality of the competitors.

The infirmary wards are in four double blocks or pavilions, with their axis north by west and south by east. Each pavilion is in two floors, and on each floor is a ward for twenty-four beds, with a day-room and verandah at one end and a special ward, ward-kitchen, and stores at the other end, the whole being in communication with, but separated from, the main corridor by a disconnecting lobby. All wards have their water-closet block central in the length of the ward and placed on the east by north side, whilst a verandah also to every ward is on the west by south side, a minor but important point which has been neglected by other competitors.

The block for short-period lunatics comprises on each side two bed wards, attendance-room with padded-room adjoining, store, bath-room, and water-closet. This building is placed near the porter's lodge at entrance.

The epileptic block is complete in itself in two stories, on each side of which for either sex is a ten-bed dormitory, a day-room, two single rooms, attendants'-room, store, bath-room, and lavatory block. On the ground floor is the general dining-room, kitchen, and accessories. The isolated block is also a complete establishment in itself, with small administration block in the centre, containing nurses'-rooms, kitchen, and adjuncts, washhouse, disinfector, and mortuary, the ward blocks being on either side at the end of a central corridor.

The second and third premiated designs are so far inferior to the first and so little superior, if at all, to some other non-premiated designs, that we opine that the assessor must have had far more difficulty, as indeed frequently happens in competitions, in selecting these designs than in placing the first. The second premiated design locates the infirmary on the north-west portion of the site, thus entailing a considerable fall in the ground line of this building, which is, to a certain extent, obviated by raising the whole of the blocks on open arches. The iso-

lated blocks are well placed, but the blocks for epileptics and imbeciles are arranged in rather a straggling fashion on the south-west boundary of the site on falling ground. The authors have preserved a position for the workhouse on fairly high ground towards the north-east boundary of the site, but seem to have sacrificed too much for the sake of the position of this future building, which, moreover, although in a good position, is not as indicated on the block plan in itself compact. The arrangement of the administration block is defective, the stores are badly arranged, the vegetable, meat, and bread stores, for example, being open only to the kitchen. The operating-room is on the main corridor, to the disadvantage of the medical staff and of the seclusion which is desirable for this apartment. The infirmary wards are, as in the first premiated design, in two stories, with twenty-four beds in each ward, a single ward, and what is called a balcony day-room at the end of the day-ward. In an alternative plan a day-room is shown separated from the main ward by a bath-room and nurses' kitchen. The sanitary blocks to the main wards are placed in the centre of the long side, but in half the wards it is on the north-east side, and in the other half on the south-west. The adjuncts of the wards at the corridor end are not so well arranged as in the first premiated design, nor is there a disconnecting lobby separating the pavilion from the main corridor.

The plan of the laundry is good, as are also those of the receiving-wards, infectious, and short-period lunatics, although these are of ordinary type, but this design is one of those in which the receiving-wards are isolated buildings near the main entrance. In the blocks for epileptics the dormitories are wholly on the upper floor, the dining-room and day-rooms on the ground floor. The mortuary and post-mortem room are not well arranged.

The third premiated design places the infirmary on the north-west portion of the site, and constitutes it part of a grand future scheme rather than a complete entity. The laundry and engineering department particularly emphasises this idea, in which the future workhouse is to form the centre of the group of which the infirmary laundry and blocks for epileptics., &c., are separated parts. As a whole this would form a good general scheme.

The administration block has an attractive plan and many good points, but also serious defects, notably in the steward's department, which lacks proper arrangement for the reception of stores, there being apparently only one door of access and that on an internal corridor. The ward units in this design are for twenty-four beds and of fairly good plan, with the day-room at the end. They are cut off from the main corridor by an isolating lobby, but the sanitary blocks are in some cases on the north-east, in others on the south-west side of the wards. The operating-room is on the main corridor. The laundry is well arranged, but the officers' washing is proposed to be done in the same washhouse with that of the patients', although separate machines are indicated for it; these probably would, unless under strict supervision, be sometimes improperly used. The block for epileptics is in this design arranged in one story with a dormitory for twenty-four beds.

Taking some of the other designs in the order of their number, we come to design No. 4, which is, in many respects, an excellent and well-worked-out scheme, somewhat expensive, and possessing two features which the assessor considered detrimental, and which undoubtedly placed this design out of court; these are the arrangement of the infirmary wards in three stories, and the provision of a separate nurses' home, this latter in particular being against the express wish of the Guardians.

The infirmary is here placed on the best part of the site, and forms part of a good general scheme for the future. The administration block is excellently arranged, though of a different type to that adopted in the first premiated design. The receiving wards are a separate building near the entrance, intended to be balanced by vagrant wards hereafter. The operating-room is on the main corridor. The detail of the infirmary wards and other buildings leaves little to be desired, and the whole is a most excellent design, although non-suited by the features to which we have already referred.

No. 8 leaves the best part of the site unoccupied, except for a future chapel, and places the infirmary on the southern side, with a considerable slope in the ground, necessitating high arches below the ground floor in order to maintain the level. The ward unit is of an old-fashioned type, not isolated from the main corridor, and with the sanitary arrangements in angular end towers. The administration block is defective.

No. 9 is a design with several good points, but has three-story wards, and leaves no room for convenient arrangement of a future workhouse, both of which form vital defects in the judgment of the assessor.

No. 10 has a general plan resembling somewhat that of the first premiated design except that the aspects of the administration block are reversed, so that the entrance is from the north-west instead of from the south-east. This plan shows a fairly good administration block, and also a good ward unit, although not isolated from the main corridor. The operating-room is on this main corridor, and the receiving wards are separate blocks near the entrance, and are not quite of the best arrangement in detail.

No. 16 is a workmanlike set of drawings, but like several others, although good in itself, is put out of court by the adoption of three-story wards.

In No. 17 the infirmary is placed on the southern end of the site on a south slope. The arrangement of the administration block is good, and so also is that of the ward unit, although it is not isolated from the main corridor.

No. 20 has a site-plan approximating to that of the first premiated design, but the blocks for epileptics, isolated patients, and laundry are scattered. The entrance to the administration block is on the north-west, instead of on the south-east side. The arrangement of the infirmary wards is inferior, and incomplete in the adjuncts.

No. 21 is fairly well arranged on the site, and the arrangement of the administration block is fairly good; but the ward unit is poorly planned, and generally the design follows an old-fashioned type of planning in buildings of this class.

No. 22 in the site-plan suggests an eligible building estate, but is nevertheless not without merit, save that the space reserved for the future workhouse is rather pinched. The administration block is somewhat straggling, but still fairly planned. The ward unit is good, and considerable pains have been taken to give an access exactly north and south. The design, however, if for no other reason, is hopeless through the provision of a separate nurses' home.

No. 25 has a compact site-plan with the infirmary on the highest and most level ground, as in the first premiated design. The administration block is, however, poorly conceived, and, indeed, is little better than a jumble of heterogeneous parts, whilst the buildings are of an old-fashioned type.

In our remarks it will be noticed that we have made no mention of the external architectural treatment of the various designs in this competition. Everything has turned upon plan, and scarcely one of the competitors has furnished anything approximating to a pleasing exterior. Even in the first premiated design one would wish for more artistic, though not necessarily more expensive treatment. It must, however, be admitted that in this particular, as in others, this design holds its own. Perhaps the most artistic elevations are to be found in design No. 4, which we have already commended for its many excellences, although placed out of court by the considerations which have, justifiably enough, determined the judgment of the assessor.

CONGRESS OF ARCHÆOLOGICAL SOCIETIES.

THE twelfth annual Congress was held in the rooms of the Society of Antiquaries on July 11, when Sir John Evans presided. There was a good attendance of delegates from all parts of the country, and a considerable number of subjects discussed. Sir John Evans introduced the question of the "Law of Treasure Trove," with special reference to the present action of the Treasury with regard to the Irish gold finds now at the British Museum; Mr. Round read a good and amusing paper on the "Systematic Study of Place Names"; the custody of diocesan and local records was discussed at length; but the two subjects that were of the most interest were those that came before the morning session.

The first of these was the British Museum Bill, which was introduced by Mr. J. Willis-Bund. Although this Bill was now withdrawn, the principle might be reasserted and so he thought it was worth criticising. He said he looked with favour on any proposal to strengthen the hands of Local Authorities in preserving and dealing with their records, and so he had no objection to the idea of the Trustees of the Museum entering into agreement with County Councils as to the transference of part of their stores, whether newspapers or otherwise. But if such a proposal was to be rendered acceptable there must be financial assistance. He spoke as chairman of a County Council (Worcester) that had just spent a good deal more than 1,000*l.* over their record-rooms to accommodate and preserve the documents in their custody. But it would be too bad for the ratepayers to have to not only find buildings to store the overplus of the British Museum, but also to provide for their suitable supervision and inspection. In this view Mr. Willis-Bund was strongly supported by Sir John Evans, who was careful to explain that on this occasion he did not speak as a Trustee of the Museum, but as Vice-Chairman of the Herts County Council. The discussion was quite one-sided, for all seemed to take the view put forward pretty plainly by Mr. Willis-Bund that it was "a dodge" of the Treasury to make ratepayers do their work. No one seemed to object to local newspaper files being kept in the localities; but the outcome was a resolution urging that the Treasury should press on speedily with the new buildings of the Museum. Sir John Evans said that if the comparatively small scheme of these buildings was carried out, there would be ample room in the basements for the storage of all the literature they had hitherto received.

The other question was the Union of Benefices Bill so far as it affected buildings. This was most ably explained and criticised by Mr. Philip Norman and Mr. E. H. Freshfield. This Bill, promoted by Convocation, has passed through the House of Lords, but is sure to meet with strenuous opposition in the House of Commons, and will probably be withdrawn for this Session. It proposes to extend the Union of Benefices Act of 1860 to the whole of England. That Act gave authority to pull down churches in the City of London and to sell the sites and apply the proceeds to church building in the outlying parts of the Metropolis. The uniting of benefices was only a secondary consideration. Churchyards cannot, unless a special Act is repealed, be built over, so this Act will only allow of the pulling-down and selling the sites of churches in provincial towns or in country districts. Such sites will yield little return, and so very little will be done by such means to relieve the poverty of the clergy. It was argued that that could better be secured by some relaxation of the Pluralities Act. However, the Congress was brought back by the Chairman to the consideration of the archæological aspect. Mr. Willis-Bund was as emphatic as Messrs. Norman and Freshfield in denouncing the Bill, notwithstanding its unanimous episcopal support, and so were two of the clergy who joined in the discussion, the Rev. P. J. Ditchfield and the Rev. R. Dute, Rural Dean of Pershore. The Congress passed with unanimity a resolution of protest against the Bill, as likely to lead to the destruction of a large number of ancient and historic churches throughout the land.

COMPETITIONS.

HONITON WATER SUPPLY.—The competition for a plan for supplying Honiton with water has resulted as follows: First premiated design, Messrs. Beesley, Son, & Nichols, 11, Victoria-street, Westminster, S.W.; second premiated design, Mr. Fred Hammond, St. Ann's House, 27, Bridge-street, Chepstow.

MISSION CHURCH, CARNOUSTIE, FORFAR.—A mission hall in connexion with the Church of Scotland is in course of erection in Carlogie-road, Carnoustie. Messrs. James Maclaren & Sons, of Dundee are the architects, and the following are the contractors:—Masonry, Messrs. A. Black & Son; joinery, Mr. James Miller; slating, Mr. William Robertson; plumbing, Mr. John M'Andrew; plastering, Messrs. Alexander M'Ritchie & Co., all of Carnoustie.

MAGAZINES AND REVIEWS.

IN the *Art Journal*, under the title "The Story of a Tower," Mr. S. Fisher gives a historic description of the ancient erection at Westminster known as the Jewel Tower. The article by Mr. Quentin on that collection of eccentricities and unfinished figures to be found in the Rodin Exhibition at Paris is a curious example of the manner in which the critics of the present day will accept and bow down to any kind of new humour in art which claims originality. M. Rodin is a genius, undoubtedly, but he is throwing his genius away on the kind of things he is doing now. "Design in a Dead Century," a rather flippant article by Mrs. Bruce Clarke, deals with lacework, and is illustrated by some pleasing designs by the author and other ladies. The Paris Exhibition Supplement is a very good one.

The *Studio* (June 15), a very finely-illustrated number, gives a review of "The Art of 1900" accompanied by many illustrations of decorative work, paintings, and sculpture, including some of Mr. Byam Shaw's studies for figures in "The Ways of Man" and other works, and the nude study for Mr. Draper's "Gates of Dawn," from a very un-beautiful model, which gains by the drapery of the complete work. There is also the second part of the article on "Suggestions for the Improvement of Sporting Cups and Trophies." The illustrations to this have been expressly designed. Some of them, as the "Sketch model for a yachting cup" by Miss Gertrude Smith, are too broken in line and want constructive unity and the quality of "style," which is in fact too often lost in the search for originality; and the design for a silver sporting cup by Mr. David Veazey is ruined by the unfortunate realism of the naturalistic joint in the stalk. This naturalistic treatment of vegetable form is quite out of place in silverwork, or in fact in any metal design. Miss Houston's two cups are admirable.

The Artist includes among its multifarious contents a very good paper on "Design for Stencilling," read before the Society of Designers; an attempt to define the principles which should govern this class of artistic work. The author rightly dwells largely on the work of the Japanese in stencil patterns, from which, as he says, we have much to learn. An article on Dresden China is also of considerable interest.

The *Berliner Architektur-Welt* contains illustrations of considerable variety and interest, especially those of the Villa Staudt in Berlin, of which Herr Otto Rieth is the architect, and Herren Vogel and Widemann the sculptors, whose part in the work is important. The row of windows at the side, with their strongly-moulded architraves and the deep band of sculpture running along between them, has a very powerful effect. Then, with the want of reticence and good taste so characteristic of the Germans, the architect or sculptor or both go and spoil the whole thing by the colossal sculptured head between columns shown on page 128, which looks like a bad joke. The house front in the Behren Strasse, by Herr Messel, is quiet and good. There is a good deal of curious furniture illustration, clever but not beautiful.

The *Architectural Review* (Boston, U.S.A.) contains an article, with a profusion of small illustrations, on the work of Mr. F. Lloyd Wright, an American architect whose name is unfamiliar to us, but who seems to be a man of original ideas and methods, and that without eccentricity, which is a rare virtue. The whole of the plates are also devoted to his work, and are worth attention by English architects.

The *Architects and Builders' Magazine* (New York) contains some illustrations of the buildings at the Buffalo Exhibition, of which the electric tower is a striking design, and a curious scheme by an American architect, Mr. A. L. Valk, for adapting the French cathedral plan to a modern American church; the chapels of the chevet becoming class-rooms! The experiment is hardly a happy one.

The *Engineering Magazine* contains an article of considerable practical value to architects, on "The Electrical Equipment of Office Buildings." The number also contains an article by Mr. J. O'Connell, on "Piecework in the Machine-shop," which, if it refers to American workshops (it is not always easy to say whether an article in the *Engineering Magazine* is American or English unless specially stated), is quite at variance with the view given by the writer in the *Times*, referred to in a note on another page.

Feilden's Magazine is largely devoted to mechanical engineering, but there is also an interesting illustrated notice of the Paris Exhibition, from an architectural point of view, by Professor Jaques Boyer, and some account of the Great Northern Railway widening between Finsbury Park and Wood Green, with photographs illustrative of the structural work involved, chiefly in connexion with alterations to bridges.

The *Antiquary* includes an article on "The Study of Pompeii," by Mr. Fitzgerald Marriott, and one on an old wooden chest at St. Oswald's, Hooe, Sussex. This is a very curious and ancient affair, a dug-out, being a length of oak trunk hollowed out and rudely squared. The writer of the article, Mr. J. J. Newport, is of opinion that it is of Saxon workmanship; it is certainly of very ancient date. "Ancient Customs and Traditions still Lingering in Italy" is the title of an article by Miss Vansittart. The *Antiquary* also records among its Notes the discovery of a hitherto unknown circular staircase in Durham Castle, presumed to have been a means of access to the upper floors of the castle before the construction of the black oak staircase by Bishop Cosins in the seventeenth century.

The *Nineteenth Century* contains a long article by Mr. Spielmann on the "National Gallery in 1900," largely concerned with the question of the selection and acquirement of pictures, in regard to which he notes several important gaps still remaining (no example of Masaccio for instance), and further urges that superfluous Turners and Landseers should go to the Gallery of British Art at Millbank, only enough being retained at the National Gallery to represent adequately the two painters. The view that British art should not be more largely illustrated at the National Gallery than any other school is perfectly sound; the Gallery represents the art of the world, not of England. Mr. Spielmann naturally speaks strongly as to the necessity of thoroughly isolating the building, after the warning we have recently had; and proposes also an increase of internal space by roofing over the two small open courts and throwing them into the galleries. As to the façade, we are glad to see that he expresses the strong opinion that something should be done in the way of improving or rebuilding it, but he does not seem to be alive to the equally great absurdity of the existing arrangements of the entrance and staircases.

The *Fortnightly* contains an article by his Honour Judge Parry on "The Workmen's Compensation Act: What it was to be and what it is." Judge Parry has of course no difficulty in showing that it is full of contradictions and anomalies, if not in itself, at all events arising out of its working, but he seems very much possessed by the idea of compensating workmen for every accident in the course of their employ, whether through their own fault or not. He mentions among other things the case of a boy who had to serve the worker of a machine but was forbidden to interfere with the machine, tried to clean it one day and was injured; and of a railway servant who jumped on the step of a moving train, not in the way of his duty but for his own pleasure, and was injured in getting off. He seems to write as if it were a defect in the Act that both these were ruled to have no claim for compensation! What possible claim ought they to have had, either legally or morally? The number also contains an article by Mr. H. H. Statham on the Paris Exhibition.

Blackwood, under the heading "Musings without Method," has some excellent critical remarks on the Paris Exhibition, showing that the writer appreciates the artistic genius of the French. Speaking of the new bridge, he says, "So simple and just is the design that it would have escaped any but a French brain. . . . The credit of perfect order belongs to France alone." After speaking of the brilliant effect of the Champ de Mars structures when illuminated at night, he adds, "But the two palaces, great and small, need not fear the light of day. None but French architects could have built them, and it is to the severe respect for tradition that they owe their beauty."

The *Westminster Review* contains an article of rather unusual interest as a piece of art-criticism—an essay on the Art of Rembrandt, by Mr. Henry Bishop. Whether the writer is not reading into Rembrandt more than the painter really intended may be a question, but it is an able attempt to analyse the secret of that peculiar power of expression and effect in such a work for instance as "The Rabbi"—to show why it is impressive—which is useful towards a thoughtful appreciation of the work of Rembrandt, although with the painter himself we are inclined to think that the treatment was the result of a kind of inspiration rather than of a settled intellectual theory. A very different type of artist is the subject of another article—the late Aubrey Beardsley, who we do not consider was worth taking in this serious manner; genius he had, no doubt, but he was a kind of disease in art, not pleasant to contemplate.

The *Century* contains two interesting light articles on Paris subjects—"A Pictorial View of the Paris Exposition" (Americans always persist in saying "Exposition" instead of "Exhibition," because it is more French), with pictures by M. André Castaigne, and "Artistic Paris," by Mr. Whiteing, forming the concluding article of a series on Paris of to-day, and also illustrated by Mr. Castaigne's very clever pictures. Mr. Cole's engraving from Constable's "Hay-wain" forms the frontispiece — a beautiful piece of broad line-engraving.

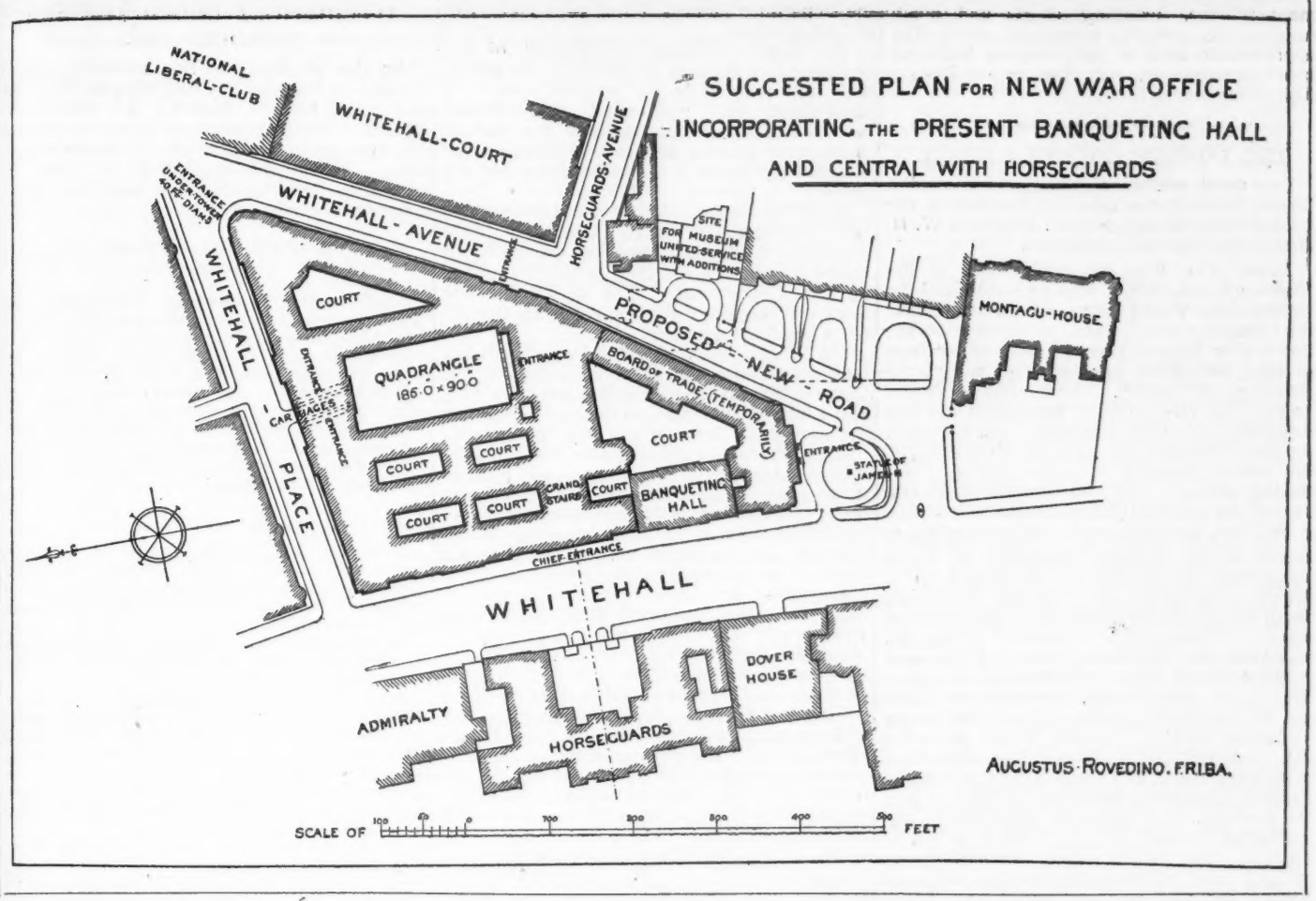
Scribner, under "The Field of Art," considers "Another way of designing a modern house," as illustrated in a Paris *maison à loyer* under the name of "Castel Béranger." This is, judging from the illustrations, a curious and perhaps in some respects wholesome variation on the typical Paris house front, but in the eccentric treatment of metal work and other details it seems to have entirely lost that quality of style which, with all their sameness of aspect, is so remarkable a characteristic of modern Parisian street houses.

The *Revue Générale* includes, in M. Trogan's "Lettre de Paris," some good critical observations in regard to the buildings of the Paris Exhibition. M. Trogan, among other things, is satisfied to find that, when it came to designing a permanent palace (or rather two) the French architects discarded the "esthétique du fer" which was the great novelty of the 1889 Exhibition, and became "architraditionnel"—a new and rather happily-coined word.

The *Gentleman's Magazine* contains a short article by Mr. Austin M. Stevens on "The Sedan-chair," a highly-interesting historic conveyance which would in fact merit a much fuller and more illustrative treatment than is contained in this short literary article. It is an interesting point that Horace Walpole, writing in 1791, attributed the gradual abandonment of the sedan-chair to the increase in the size of London—"The town is so extended that the need of chairs is almost lost, for Hercules and Atlas could not carry anything from one end of the enormous capital to the other." The same number contains one of Mr. Ellard Gore's astronomical articles, on "The Herschels and the Nebulæ."

The *Home Counties Magazine*—an excellent publication, which we recommend to the notice of our readers—contains an article on Lincoln's Inn Gatehouse, with a reproduction from an old drawing by Ireland showing its appearance in 1800. Other articles contain a good deal of matter of archæological and historic interest.

Knowledge contains an article by Mr. Charles Davison, an expert in earthquakes, as we may say, on "The Great Indian Earthquake of 1897." The article is a very interesting one, though it does not throw any special light on the effect of earthquakes on buildings. The number includes a fine illustration of "The Corona of May 28, 1900," drawn by Miss Catherine O. Stevens, from an observing station on the roof of the Hôtel de la Régence at Algiers. Taking the known diameter of the sun as a scale, one of the spikes of the corona must be over 250,000 miles long, or high whichever way we choose to put it. Mr. A. E. Mitchell, in a short letter returning to the subject, "Is the Stellar Universe Finite?" puts the question in a new position by observing that the probability, and the generally received opinion, is that the galaxy, of which our sun is a member, is only one amongst many huge star-groups, which appear where visible to us as nebulæ (some of the apparent nebulæ, however, are surely within our system). If the discussion is confined to the galaxy alone, then its general shape, and our position in it, are fairly well understood. "If the *whole* of the visible stellar universe is to be included, then the question assumes a different aspect entirely, and becomes more formidable than I should care to deal with." Indeed, the difficulty of conception, to



the human mind, seems about as great whether we try to think of it as finite or infinite.

Longman's Magazine contains an article by Mr. Stanley Lane-Poole on "Egypt in the Middle Ages"; it is to a considerable extent social and political, but touches on the works of Ibn Tulun and his great mosque, which the writer claims to have been "the first example of the pointed arch used throughout a building."

The *Pall Mall Magazine* contains an article on Naworth Castle, by the Rev. A. H. Malan, with illustrations from photographs by the author.

Moring's Quarterly continues its essay on the "Architecture and Art of Siena."

The *Quarry*, besides its serial article on "The Mineral Industries of the United Kingdom," includes an article on "Comparative Tests of Different Forms of Cement Briquettes," and one on "A Visit to the Slate Quarries at Angers."

The *Genealogical Magazine*, which is beginning to add a good many illustrations to its text, gives among others a plate showing the armorial bearings of Arbroath, with an article on their history. These illustrations of the armorial bearings of cities will be of considerable value as a collected series.

We have received also *Harper*, the *English Illustrated Magazine*, and *Climate*.

AN IMPROVED METHOD OF TIMBER PRESERVATION.

AMONGST the many processes adopted for the protection of timber from hostile agencies, there is none which can be said to be absolutely and entirely efficient, although all of them are useful so far as they go. It was formerly believed that the injection of metallic salts in solution caused the formation of insoluble chemical compounds with albuminous matter contained in the sap-wood. In the present day the opinion is generally held that no such combinations are formed, and that the value of metallic salts is only contemporary with their presence in the wood. As they are readily removed by the action of external moisture, no permanent effects can be anticipated. Creosoting is a more efficacious process, being both chemical and mechanical in its nature. Creosote contains a variety of antiseptic constituents of well-known value, but it is highly probable that the long life of timber treated by the creosote process is largely due to the fact that the pores of the wood are sealed up by the thick insoluble oils and naphthaline, so that air and water are excluded, and with them the germs causing decay. Creosoted timber is not thoroughly permeated with the oil, the interior portions are not absolutely sterilised, and the material is usually in a more or less spongy condition after treatment. A recent contributor to the "Proceedings of the American Society of Civil Engineers" gives an account of some experiments upon timber, an improved method known as the creo-resinate process. The writer in question starts with the excellent hypothesis that satisfactory treatment involves preliminary sterilisation concurrently with the removal of as much moisture as may be possible without injury to the fibre of the wood. The application of a suitable antiseptic fluid is then recommended, in order that germs of decay may not enter from without, and the preservative material must be such that it shall not be dissipated by any ordinary agency. Further, it must in some way be provided that the timber shall be able to resist external pressure without undue crushing. To sterilise wood by heat is difficult, firstly, because a very long exposure at the comparatively low temperature of from 215 deg. to 225 deg. Fahr. would be required to attain the desired effect; and secondly, because exposure to a high temperature of, say, 290 deg. to 300 deg. Fahr. would injure the fibres and induce extensive splitting. In the creo-resinate method of treatment the use of high temperatures is rendered possible by the employment of pressure simultaneously with the application of heat. By the adoption of this system it is said that the temperature necessary for destruction of internal germs is ensured throughout the timber, whilst the natural oils are conserved, and splitting or cracking does not ensue. After sterilisation, air is removed from the timber by vacuum apparatus in the usual manner, and the preservative fluid is then injected 200 lbs. under pressure. The mixture recommended consists of—creosote, 38 per cent.; formaldehyde, 2 per cent.; and melted resin, 60 per cent., by weight. The resin is intended to render the mixture thoroughly waterproof, and the formaldehyde is to strengthen the antiseptic nature of the compound, necessarily somewhat reduced by the addition of the resin. Finally, the timber is treated by the injection of milk of lime, which produces a hard, elastic surface. Experiments appear to indicate that the improved method of treatment reasonably complies with all essential conditions. It has already been adopted in the United States, and is certainly a process which merits careful consideration from those interested in the preservation of timber.

SUGGESTED PLAN FOR NEW WAR OFFICE CENTRAL WITH HORSE GUARDS.

IN the accompanying block plan, showing a suggested enlargement of the site for new War Office, it is proposed to do away with that part of the Horse Guards-avenue from its starting point in Whitehall to its junction with Whitehall-avenue (utilising this portion for building purposes), and to cut a roadway *through* Whitehall-gardens (now a *cul-de-sac*) in continuation and extension of Whitehall-avenue, giving thereby a direct route to and from the City and Westminster viâ the Embankment, and forming a very largely increased building area and frontage for the War Office.

That part of the enlarged site facing the new roadway it is proposed could be occupied temporarily by the Board of Trade, subsequently being appropriated to the War Office when further extension was required. By the Government scheme no such extension can be possible, and if a replica of the Banqueting Hall as a Parliamentary Library be carried out as proposed, it will necessarily involve the demolition of part of Whitehall-place and Great Scotland-yard.

Upon the question of cost (compared with the Government scheme), the proposed plan, whilst giving far larger building area and frontage, would destroy only the old buildings (of little value) which abut on the present Horse Guards-avenue.

In the Government scheme, should the Parliamentary Library be erected as proposed, or as in the suggested plan, it is obvious that the buildings of the United Service Museum and Gwydyr House would have to be removed. It is, however, to be noted that the suggested plan provides a site for the reconstruction of the building of the United Service Museum, with space for additions on either side upon the site of old Carrington House, and in the garden attached to this mansion galleries could be erected with top light as occasion required.

AUGUSTUS ROVEDINO, F.R.I.B.A.

P.S.—The approximate area of the Govern-

ment scheme, including courts and quadrangles, is 102,575 superficial feet. The approximate area of my scheme, including courts, quadrangle, and Banqueting Hall, is 203,930 superficial feet.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, Alderman W. H. Dickinson, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Bermondsey Vestry 3,000*l.* for paving works; the Chelsea Vestry, 1,000*l.* for paving works; the Poplar District Board, 9,480*l.* for purchase of land, rebuilding of footbridge, and reconstruction of sewers; the Fulham Vestry, 50,519*l.* for electric light installation and dust destructor, &c.; the Lambeth Vestry, 21,000*l.* for paving works; the Islington Vestry, 8,579*l.* for electric lighting purposes, and 455*l.* for paving works; and the Shoreditch Vestry, 21,905*l.* for electric lighting purposes.

The Works Department.—The half-yearly return of the Finance Committee of works completed by the Works Department up to March 31 last gave rise to a long discussion. In all twenty-three estimated works are reported upon as having been completed during the half-year, and on these there is a loss or a balance of cost above final estimates of 19,950*l.* The loss is chiefly made on some work carried out for the Main Drainage Committee at the Crossness outfall. This was begun under the late management, or before the Department was re-organised, as a result of the report of the Special Committee appointed to inquire into its working. On this work alone, which was estimated to cost 34,617*l.*, there is a loss of 16,279*l.*, the actual cost amounting to 50,896*l.* Out of twenty-two works completed during the past half-year and begun under the present management, fifteen have been executed at a less cost than the respective estimates, and the resulting saving to the Council works out at 4,010*l.* On the other hand, certain blocks of dwellings erected for the Housing Committee have cost considerably more than the estimates. The total amount of excess cost upon these and other works in the list is 7,680*l.*, so that the net result as regards works begun under the present management and completed in the half-year is an excess of cost over final estimates of 3,670*l.*, or about 2½ per cent. The whole of the works commenced under the late management being now complete, it is possible to state the full result of the operations of the Department so far as these works are concerned. The statement shows that the final estimates of these works amounted in the aggregate to 793,990*l.*, and that they have been executed at a cost to the Council of 865,224*l.*, so that the excess of cost has been 71,234*l.*, which is equal to about 9¾ per cent. The works commenced under the present management and completed during the past three years show a saving over estimate of 6,694*l.*, or nearly 3 per cent. A statement of the total operations of the Department since its creation in November, 1892, shows a balance of cost above estimates of 64,539*l.*

Mr. Harris observed that in the past the excuse for the failure of the Works Department had been found in the action of the Moderate members. A new excuse had now been discovered, by which all the mischief was attributed to the late management of the Department, whilst the most rosy anticipations for the future were promised under the present management. The most serious aspect of the question was the bearing it might have upon the work of the Housing Committee. Up to the present time the building estimates had been exceeded by nearly 27,000*l.*, which meant a heavy addition to the debt for housing. The Council were rapidly drifting into a dilemma. He protested against the policy of drift, and hoped the Council would seriously consider how they were hampering housing operations by giving the work to the Works Department.

Mr. Beachcroft declared that the Works Department had proved itself an undoubted failure in regard to the erection of working-class dwellings. Even under the present management the losses were going on. If the results which were before the Council were placed before an industrial dwellings company the latter would either give up building or dismiss their manager. He urged that for the future no work of that kind should be given to the Department, unless it had been previously put out to tender.

Mr. Howell Williams complained of the irritating interference of clerks of the works, and said that while the present system of supervision was maintained the estimates would always be exceeded. If the Department were put on the same footing as the ordinary contractor it would be able to show a profit.

Mr. M'Dougall considered that, taking extras into consideration, there was very little difference in the results between works carried out by contractors and those which were done by the Department. The contractor was always urging for extras, whereas the Department could not get them.

Mr. Burns, M.P., said the Department had met with opposition from a section of the Council, bias on the part of the clerks of works, and a lack of sympathy on the part of some of the assistants. Even if the cost had in some instances exceeded the estimates, the quality of the work done by the Department quite justified its existence. The supervision had been abnormally critical towards the Department, and very superficial towards that of contractors. Whatever the reason might be, the fact was that clerks of works disliked the system of direct employment by public bodies. The Department had pulled down contractors' prices from 15 to 25 per cent. during the past seven years. No doubt there was room for improvement in the Department, and he thought the ridiculous establishment charges should be reduced. If the principle of direct employment were continued, and the occasional supervision of the architect substituted for the present army of clerks of works, the work could be carried out for 5 or 6 per cent. less than at present. In the interests of the ratepayers the Department should be continued, if only to keep bad contractors in order. The Council had secured full value for the expenditure, and the financial loss put forward was purely hypothetical. He looked to the re-establishment of the Works Committee as likely to occur at no distant date.

Mr. E. White agreed that the establishment charges were very heavy, but denied that the quality of the work done by the Department was superior to that of contractors.

Mr. Ward, an ex-chairman of the Works Committee, contended that, allowing for sinking fund charges, the loss on the Department since its formation was not 70,000*l.*, but only 40,000*l.*

The excess votes were then agreed to.

Technical Education.—In reply to Mr. Granville Smith,

Mr. T. A. Organ, Chairman of the Technical Education Board, stated that the Baroness and Mr. Burdett-Coutts had offered to the Council the freehold of the Westminster Technical Institute in Vincent-square, together with two houses and the site adjoining, for the purposes of future extension. The site comprises about half an acre, and the value of the site and the Institute building, which is nearly new, is not less than 11,000*l.* The classes held here have been the most successful of any technical classes in London.

The Strand to Holborn Street.—The Improvements Committee submitted a Report on the invitation to eight leading architects to submit designs in connexion with the new Holborn to the Strand street. The time for sending in the designs has been extended to October 8. The eight selected architects, whose names were given in our last issue, page 9, have been informed that perspectives or any drawings other than those provided for in the Council's conditions will not be admissible. The Report was adopted.

In reply to a question, Dr. Longstaff said, in connexion with the Strand improvement, half the new roadway would be thrown open to the public in three months.

Applications under the Metropolis Management and Buildings Acts Amendment Act, 1878.—The following recommendations of the Theatres and Music-halls Committee were agreed to :—

Proposed Royal room at the Great Queen-street Theatre (Mr. J. Murray).

Proposed engine-room at the new Grand Palace of Varieties, St. John's Hill, Clapham Junction (Mr. E. A. E. Woodrow).

The ventilation of the proposed Theatre, Shaftesbury-avenue (Mr. L. Sharp, for Mr. Lowenfeld).

The Council, having transacted other business, adjourned.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

AT the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Formation of Streets near Brockley Station, Brockley.

Deptford.—That the resolution of the Building Act Committee of July 25, 1898, acting on behalf of the Council, sanctioning the formation of streets, to be named Arica-road (in continuation), Horsted-road (in continuation), Revelon-road, Finland-street, Dundalk-street, Donyland-street, Avignon-road, St. Asaph-road, and Aspinall-road, on the Hogarth estate and Haberdashers' Company's estate near Brockley Station, be rescinded so far as relates to the formation of the proposed street to be named Donyland-street.—Agreed.

Lines of Frontage.

Bermondsey.—A building, partly one story and partly two stories in height, on the north side of Jamaica-road, Bermondsey, between Nos. 63 and 71 (Messrs. Gordon & Gunton for Messrs. Plowman & Co., Limited).—Consent.

Greenwich.—A cricket pavilion on the south side of Manor-way, Lee (Mr. S. Hill for the Derrick Wanderers Cricket Club).—Consent.

Greenwich.—That the application of Mr. L. V. Hunt for an extension of the period within which the erection of two houses on the south side of Manor-way, Lee, was required to be commenced, be granted.—Agreed.

Greenwich.—A house on the south side of Manor-way, Lee (Mr. L. V. Hunt for Messrs. L. Whitehead & Co.)—Consent.

Lewisham.—That the application of Mr. W. H. Woodroffe for an extension of the period within which the erection of a church and school on the south-west side of Perry-vale, Lewisham, at its junction with Perry-rise, was required to be completed, be granted.—Agreed.

Lewisham.—A four-story addition to Burton-villa, Sydenham Park-road, Lewisham, to abut upon Sydenham Park (Mr. G. Tolley for Mr. E. C. Christmas).—Consent.

Brixton.—The retention of a detached greenhouse erected on the forecourt of a house known as Rathcole, Ferndale-road, Brixton, to abut upon Bedford-road (Dr. C. Fenwick).—Consent.

Deptford.—One-story shops on part of the forecourts of Nos. 462 and 464, New Cross-road, Deptford (Mr. J. Webster).—Refused.

Dulwich.—A one-story shop on part of the forecourt of No. 99, Anerley-road, Anerley (Mr. S. C. Dunk).—Refused.

Dulwich.—A one-story shop on part of the forecourt of No. 97, Anerley-road, Anerley (Mr. W. R. Woodhouse).—Refused.

Dulwich.—A one-story shop on part of the forecourt of No. 170, Anerley-road, Anerley (Mr. J. Sherratt).—Refused.

Dulwich.—A timekeeper's office on the forecourt of No. 7, East Dulwich-road (Messrs. McKenna & Co. for Messrs. Batey & Co., Limited).—Refused.

Hackney, Central.—Two blocks of residential buildings on the west side of Clarence-road, Hackney (Mr. A. Bedborough for Mr. J. W. Woodall).—Refused.

Projections.

Hampstead.—Sham half-timber work and a timber-framed bay window and porch at No. 35, Kidderpore-avenue, Hampstead (Messrs. Treadwell & Martin for Mr. A. A. Barron).—Consent.

Lewisham.—An open timber-framed porch at the entrance to the Willows, Hengrave-road, Honour Oak Park, Lewisham (Mr. W. Avis for Major A. Locke).—Consent.

St. George's, Hanover-square.—That the application of Messrs. Holland & Sons for an extension of the period within which the erection of an open portico at the entrance to No. 25, Bruton-street, Berkeley-square, was required to be commenced, be granted.—Agreed.

Westminster.—Three pilasters in front of a building in course of erection on the west side of Regency-street, Westminster (Messrs. Hunt & Steward for the Canteen and Mess Co-operative Society).—Consent.

City of London.—Two oriel windows on the first and second floor levels of a block of offices on the site of Nos. 28, 29, 30, and 31, Bishopsgate-street Within (Mr. T. H. Smith for Messrs. Lewis & Marks).—Refused.

Strand.†—An iron and glass hood at the entrance to the Cocoa Tree Club, No. 64, St. James-street, St. James (Messrs. W. Johnson & Co., Limited, for Messrs. J. Woodward & Sons).—Refused.

Chelsea.—Two bay windows in front of No. 55, Church-street, Chelsea (Mr. R. Burr for Mr. P. H. Jeffries).—Refused.

Hoxton.†—A gallery at the second-floor level in front of Nos. 69 and 71, Willow-street, Hoxton

(Messrs. Staines & Son for Messrs. Carlhian & Beaumetz).—Refused.

Woolwich.—Bay windows to twenty houses on the west side and twenty houses on the east side of Greenholm-road, Eltham (Mr. R. Stewart for Mr. A. Cameron Corbett, M.P.).—Refused.

Width of Way.

Westminster.—A block of buildings on the south-east side of Francis-street, Westminster, between Greencoat-street and Emery Hill-street (Mr. E. J. Stubbs for Messrs. J. Allen & Sons, Limited).—Consent.

Hoxton.—That Mr. G. R. Cherry be informed that the Council is not prepared to accede to his request for consent to the retention in front of a workshop on the north side of Hobbs-place, Hoxton-street, Shoreditch, of a boundary fence at less than the prescribed distance from the centre of Hobbs-place . . . but that Mr. Cherry be informed that a proposal to at once set back the boundary fence to a line drawn from the south-east corner of the building to the westward to the south-west corner of the building to the eastward, accompanied by an undertaking to set back such fence to the prescribed distance from the centre of Hobbs-place wherever required by the Council so to do, would be considered.—Agreed.

Greenwich.—A house on the east side of East-street, Trafalgar-road, Greenwich (Mr. G. A. Lansdown for the Star Omnibus Company, London).—Refused.

Space at Rear.

Deptford.—A modification of the provisions of Section 41 (1) (vi.) of the Act with regard to open spaces about buildings, so far as relates to the proposed erection of a two-story dwelling-house on the south side of Grinstead-road, Deptford, at the corner of Trundley's-road, with an irregular space at the rear (Mr. J. Newton).—Consent.

Deviation from Certified Plan.

St. George, Hanover-square.—Deviations from the plan certified by the District Surveyor, under Section 43 of the Act, so far as relates to the proposed rebuilding of a stable and coach-houses with living-rooms over, on the site of Nos. 45 and 45B, Hay's-mews, Hill-street, St. George, Hanover-square (Mr. T. H. Smith for Mr. B. Lewis).—Consent.

Lines of Frontage and Width of Way.

Islington, South.—An addition at the rear of the Grand Theatre, Islington, to abut upon Torrens-street (Mr. F. Matcham).—Consent.

Kensington, South.—A temporary iron building on the north side of Holland-street, Kensington (Mr. E. C. Pilkington for the Kensington Estates Company).—Consent.

St. Pancras, West.—An addition in front of the Mohawk Cycle Factory, on the west side of Harmood-street, St. Pancras (Messrs. Thomson, James & Heard, Limited).—Refused.

Width of Way and Height of Building.

City of London.—A factory building on the north side of Fann-street, Aldersgate-street, City, at the corner of Hot Water-court, at less than the prescribed distance from the centre of Fann-street, and to exceed in height the distance from the front wall of the building to the opposite side of the street (Mr. P. B. Tubbs for Mr. H. T. Tubbs).—Consent.

Formation of Streets.

Hammersmith.—That an order be issued to Mr. J. P. Briggs, sanctioning the formation or laying-out of two new streets for carriage traffic on the London Bishopric Estate, Rylett Crescent, Hammersmith, and the abandonment of the formation of a proposed extension of Rylett-crescent appproved by the Council on April 4, 1894 (for Mr. H. Richardson). That the name Pitville-road and Rylett-crescent (in continuation) be approved for the new streets,—Agreed.

Norwood.—That an order be issued to Mr. C. J. Bentley, sanctioning the formation or laying-out of new streets for carriage traffic on the east side of Knight's Hill-road, West Norwood, and the abandonment of the formation of the proposed street to connect Ladas-road with Tivoli-road approved by the Council on July 24, 1894 (for Messrs. T. & J. T. Martin and himself). That the names Dassett-street, Ladas-road (in continuation), Tivolo-road (in continuation) and Woodcote-place (in continuation) be approved for the new streets.—Agreed.

Lambeth.—That an order be issued to Messrs. G. Trollope & Sons sanctioning the formation or laying-out of a new street for carriage traffic to lead out of the north side of St. Julian's-farm-road, West Norwood (for the executors of the late Mr. G. F. Trollope). That the name Uffington-road be approved for the new street.—Agreed.

Lewisham.—That an order be issued to Mr. J. W. Webb, refusing to sanction the formation or laying-out of three new streets for carriage traffic on the Crofton Park Estate, on the east side of Crofton Park-road, Brockley.—Agreed.

Lewisham.—That an order be issued to Mr. J. W. Webb, refusing to sanction the formation or laying out of a new street for carriage traffic to lead out of the west side of Crofton Park-road, Brockley.—Agreed.

Lewisham.—That an order be issued to Mr. J. W. Webb, refusing to sanction the formation or laying out of five new streets for carriage traffic on the Crofton Park estate, on the east side of Crofton Park-road, Brockley.—Agreed.

Means of Escape from Top of High Buildings.

City of London.—Means of escape in case of fire, proposed to be provided in pursuance of Section 63 of the Act, on the top story of a building known as Electric Railway-buildings, Finsbury-pavement, Moorfields, City (the upper surface of the floor of which story is above 60ft. from the street level) for the persons dwelling or employed therein (Mr. T. P. Figgis for the City and South London Railway Company).—Consent.

Buildings for the Supply of Electricity.

Lambeth, North.—A wood and Iron building on the roof of the meter room at the Charing-cross and Strand Electricity Supply Corporation's premises, No. 85, Commercial-road, Lambeth (Mr. W. B. Pinhey for the corporation).—Refused.

Cubical Extent and Uniting of Buildings.

Battersea.—Formation of openings in a party wall in Messrs. Ruby's works, Park-road, Battersea, at the rear of houses in Elcho-street (Mr. R. W. Price, for Messrs. Ruby, Limited.).—Refused.

The recommendations marked † are contrary to the views of the Local Authorities.

LONDON BUILDING ACT, 1894.

THE TRIBUNAL OF APPEAL AND NEW THOROUGHFARES.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Surveyors' Institution, Great George-street, Westminster, on the 6th inst., to hear an appeal by Messrs. A. H. & A. E. Simpson, under Sections 9 and 19 of the Act, against the order of the London County Council refusing to sanction the formation or laying out of new streets for carriage traffic on the Glyn Estate, on the east side of Daubeny-road, Homerton. The members of the Tribunal sitting were Messrs. Arthur Cates, F.R.I.B.A., A. H. Hudson, and J. W. Penfold.

The appellants were represented by Mr. Jutsum (Jutsum & Jones), and the London County Council by Mr. Andrews, from the Solicitors' Department.

The grounds upon which the appeal were based were that on May 2 the appellants made an application to the County Council under Section 7 of the London Building Act, 1894, for their sanction to the formation or laying out of certain new streets proposed to be named Meeson-street, Rensberg-street, Aliwal-street, and Ashdean-road respectively, on the Glyn Estate, Homerton. The Council refused to sanction the application, the reason assigned being "that the new streets would not at and from the time of forming and laying out each afford direct communication between two streets formed and laid out for carriage traffic." The appellants submitted that the proposed new streets would, from the time of forming and laying out, each afford direct communication between two streets formed and laid out for carriage traffic, and that, therefore, under Section 9 of the Act the respondents ought to have sanctioned the application, or, in the alternative, that the respondents ought to have sanctioned the laying out of one of such streets, or, as a further alternative, that they ought to have sanctioned the formation or laying out of such streets or some one of them subject to conditions.

Mr. Jutsum pointed out that the great obstacle to the plans being sanctioned was the fact that there was no direct communication with a public thoroughfare at the extreme end of the proposed roads, but he submitted that had the Council used their discretion they could have put the appellants in a position to complete the whole of the roads before any one of them should be utilised for any purpose, and if that were so, from the time of completion there would be direct communication between two streets, The appellants were quite prepared to accede to any reasonable conditions the Tribunal might impose. It was within their jurisdiction to say that these roads should be laid out and formed in the way in which it was proposed, at the same time precautions could be taken to carry out the intention of the Act, namely, to prevent the creation of *cul de sacs*. That the Tribunal had this power was evidenced by the remarks of Mr. Justice Phillimore in giving judgment in an appeal. In this his Lordship laid down that questions of this sort were purely matters within the discretion of the Tribunal.

Mr. Hudson pointed out that there was a piece of uncovered land intervening between the site and the public street. Had the appellants any right to deal with that?

Mr. Jutsum replied that he had no evidence as to that.

Mr. Frederick Meeson, architect and surveyor, having given evidence explanatory of the plans,

Mr. Andrews, for the County Council, contended that in the absence of evidence of the ownership of the strip of land referred to the Tribunal could not take cognisance of it. Generally speaking, it was the intention of the Legislature by these sections of the Act to secure the proper width and direction of streets, and the point in this appeal was not whether A, B, or C could develop his land by making some curious formation of streets, but whether on the whole evidence the Council, having regard to the public convenience, regarded the plan as such as they could sanction. He contended that, under the scheme suggested, any one going into Daubeny-road would get into a kind of maze. They would get into Ashdean-road at first and then into Rensburg-road, and there seemed no way of preventing a person getting out at the point at which he started. It was highly necessary in the public interest that there should be direct communication between two streets. In the Edmonson and London County Council case (66 *Law Times*, N.S., p. 200) this view was upheld in the Queen's Bench—that was, it was not only the interest of the landowner that must be considered in these schemes, but that of the public generally. As to cases which could be regarded as precedents, and which had engaged the attention of the Tribunal, he reminded them of the Butcher's-lane and Bevington-road appeal. A serious objection to the scheme was that, although the length of streets worked out at one-third of a mile only, there were no fewer than five rectangular turns.

Mr. Alfred Milwood, clerk in the Building Act Department of the London County Council, said these applications were always considered with due regard to the interest of the public and the convenience of the future inhabitants in access.

Mr. Andrews stated that the Hackney Vestry was represented by its Surveyor, and he had instructions to give evidence in support of the refusal of the application.

After the Tribunal had consulted, the Chairman said they had no alternative but to dismiss the appeal. They made no order as to costs.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting on the 4th inst., Sir Henry H. Howorth, President, in the chair, Mr. T. T. Greg exhibited two pieces of pottery. The first was a stove tile, 13½ in. by 9½ in., of the time of James I., made of red clay, and covered with a rich green glaze, and probably of German make. The design is heraldic in character. The other was a square-shaped slab or shield, with a round top, furnished with two stout handles. It is 17½ in. wide by 16½ in. high, and decorated with a rude floral and geometrical pattern in yellow and brown slip. It bears the letters and date, "F. T. E., 1758," and is supposed by Mr. Greg to be the door of an oven or a rude fire-extinguisher or curfew.—Professor Bunnell Lewis read a paper on Roman Antiquities at Baden (Switzerland) and Bregenz. He began with some prefatory remarks on the difference between hospitals in heathen and those in Christian times. The former were established for the use of soldiers and slaves, and not simply for charitable purposes as in our own days. In March, 1893, Herr Meyer commenced excavations at Baden, and the results led him to conclude that the Romans had a military hospital there. Surgical instruments in great numbers were found, amongst them a piece of a catheter, a forceps, spatulas, alembics, little bone spoons, balances for weighing drugs, and 120 probes (*specillæ*). In corroboration of Herr Meyer's conclusions, Professor Lewis pointed to the proximity of a Roman camp at Vindonissa, where a legion was quartered, and the fact that Baden (Aquæ) was frequented by patients on account of its salutary waters. The excavations carried out by Dr. Jenny at Bregantium (Bregenz) led to the discovery of the Roman roads that connected the town of Augusta Vindelicorum (Augsburg) with Vindonissa (Windisch). He also identified the site of many buildings—the Forum, public baths, &c. Professor Lewis exhibited maps, prints, and photographs in illustration of his paper.—In a paper on St. George in art, legend, ceremonial, &c., Mr. J. Lewis André pointed out the extremely mythical character of that saint, but argued that his having existed was proved by the very rapid rise of his cult in Europe, and especially in the East. The gradual promotion of St. George to the position of patron of England was next touched upon, and his connexion with guilds in this country, as in those of Chichester and Norwich. Miracle plays and *tableaux vivants* of incidents from the legends of the saint were briefly alluded to, and also reference made to representations of the warrior martyr, as seen on the walls of English churches. Mr. André concluded with asserting that St. George was rather the popular saint of the laity than the hero of the clergy. Messrs. Green, Talfourd Ely, and Rice took part in the discussions.

Illustrations.

PROPOSED NEW DOCK OFFICES, LIVERPOOL.

WE have already, in our last issue, given a tolerably full review of the three premiated designs (which alone have been publicly exhibited) for the proposed new offices to be erected at Liverpool for the Mersey Docks and Harbour Board. We give this week the perspective view and the principal plans of the first premiated design, by Messrs. Briggs, Wolstenholme, Hobbs, and Thornely. The following reprint of the report by the architects, accompanying the design, will explain the objects which have been kept in view in the design, and the manner in which it is proposed to carry it out :—

"In dealing with the site at our disposal we have effected a saving of 12 ft. along the east boundary, and also set the building back on the south and west fronts. We have not followed the building line on the west side, as we consider it preferable that the building should be rectangular in form. The land thus available, in addition to that specified to be left for ornamental grounds, provides a space capable of being treated more effectively than would otherwise be the case, and also enables us to provide an easy access for carts under the main building to the areas within for the supply of heavy goods generally.

Entrances.

The main entrance is placed on the south-west front, the roadways on the south and west boundaries being the most important thoroughfares. Ample entrances have been also provided in Brunswick-street and the proposed new street on the east side. We would draw special attention to the manner in which the three entrances converge by spacious and well-lighted corridors to a central hall, from which the various floors would be served by the four passenger-lifts. The grand staircase is placed between the central hall and the main entrance-hall. By this arrangement the lift attendants are able to superintend the whole of the corridors and easily direct the traffic on each floor, thus reducing to a minimum the usual difficulty the public have in finding the various departments in a building of this magnitude. A further advantage of this plan is that the various departments are self-contained, and that access to all of them (with the exception of a few of the single rooms on the second floor) is obtained by direct approach from the hall or corridors without the necessity of passing any other department, thus considerably reducing the length of corridors. We would point out that by this arrangement of central corridors we are enabled to provide windows on each side of all the large offices of the various departments, an undoubted advantage both for effective lighting and ventilation. The concentrated arrangement of the hall and staircase will undoubtedly give a spacious and dignified appearance to the interior of the building.

Lavatories.

The lavatories for the principals, clerks, and lady typists are grouped in a central position on each floor, and within easy reach of the various departments. A ventilated lobby separates each from the corridors. The whole of the drainage is concentrated by this arrangement.

The Departments.

We would emphasise the following points in the various departments :—1. Rates and Dues Departments : The manner in which this most important department has been planned enables us to obtain in the fullest degree ready ingress and egress from the streets. Two direct entrances from the street are provided, in addition to that communicating with the entrance-hall. With this same object in view, we have thought it advisable to make the floor of the general office only 4 ft. above the street level, which also gives an additional height of 3 ft. to this office, increasing its height to about 19 ft. The difference in the floor levels also enables the principal to overlook the whole department from his private room. The whole of the clerks are placed in one group behind the counter, which facilitates intercommunication between the subdivisions of this department.

2. Harbour Master's Department—Graving Dock Offices : We have kept the floor of the graving dock office within one foot of the street level, and provided a separate entrance for the public using this office. 3. Board and Committee Rooms : A separate cloak-room and lavatory has been provided for the members of the board. 4. General Manager and Secretary's Department : Stationery Superintendent: A room has been provided in the basement for receiving and unpacking heavy cases of stationery, &c., with a lift communicating direct with a store-room on a mezzanine and the office on the first floor. 5. Check Office : The general office has been made sufficiently large to accommodate a series of racks for the large number of papers which accumulate in this department. 6. Marine Surveyor : The drawing office, which faces north, provides ample space for the exceptionally large table required for the charts made in this department. It has been thought advisable to provide a plan and record room, and also accommodation for chains and surveying instruments generally. 7. Strong Rooms : It will be observed that in most instances the entrances to these rooms have been arranged to lead out of an ante-room, so that when the doors to strong rooms are open the rooms will be lighted by the window opposite. We have taken advantage of the height available to provide a mezzanine floor over some of the strong rooms, where books and papers which are not in daily use may be stored.

Spare Office Accommodation.

Although the instructions and conditions issued 'suggest' on page 7 that the buildings should consist of six floors, exclusive of the basement but including the ground floor—the fact that the second-floor departments require little more than half of the superficial area of the first floor and that nothing is said in the instructions as to the remaining space on the second floor being available for future additions to the staff—we take it that the two entire floors of the building, viz., the third and fourth referred to in your instructions, are presumably to be of an equal area to that required by the departments of the second floor. We have, therefore, been able to provide on the second, third, and fourth floors more than an equivalent to the two vacant floors asked for, thus making the building five stories high. The superficial area of the vacant floors that we have provided (exclusive of the provision suggested by us for keeper's house and stores on fourth floor) amounts to 66,250 superficial feet. If further space, however, is required for vacant offices, a sixth floor could easily be provided by placing two stories in the roof without materially altering the design. The arrangement we have adopted has also this advantage—that the building above the first floor facing Brunswick-street and the new street need not be built until the accommodation is actually required. There would still be vacant offices on the third floor equal in area to the second-floor departments, as well as some available space on the fourth floor. The appearance of the building as seen in the perspective view would not be affected.

Style.

The style adopted in the design of the building is that of the Late English Renaissance, treated in a simple and dignified manner. The two towers flanking the main entrance form prominent features in the design. The treatment of the interior of the building has been designed in harmony with the exterior.

Heating and Ventilating.

Heating.—The heating throughout would be by means of low-pressure hot-water pipes leading from boilers placed in the basement. Radiators would be fixed throughout the building in convenient positions. The system would be divided into sections. A spare boiler is shown for use in case of emergency. The principals' private offices would have fireplaces in addition.

Ventilation.—The planning of the building lends itself to an easy and efficient system of ventilation. As previously mentioned, there are windows in the opposite walls of all the large offices. Warm fresh air would be introduced through the radiators. The extraction of the vitiated atmosphere would be accomplished by means of an electric fan placed in each of the towers and turrets at the angles of the building ; these would be connected with a main air-duct formed in the roof. This main air-duct would again be connected to the rooms on the various floors by brick flues, built in the chimney breasts and other portions of the building where the thickness of the walls permitted it, and elsewhere by flues formed of galvanised steel, flush with the face of walls in chases left for the purpose. Into all these flues, immediately below the cornice, panels would be placed as outlets for the vitiated air. The lavatories would be similarly ventilated into the special air-flues, built around the smoke-flues, and kept absolutely separate from the general scheme of ventilation, the position of the lavatories facilitating this provision. Due provision would be made in all cases for the regulation and proper control of the inlet and outlets in the various rooms. The admission of the fresh air would be, as before described, through radiators, with supplemental air-inlet panels. These air-inlet panels when closed would be flush with the wall, and could be opened to any angle to admit the desired volume of air. The air admitted both through radiators and panels would be filtered.

Drainage.—The concentration of the lavatory blocks in the centre of the area allows of a very simple system of drainage ; manholes are provided at every change of direction, and proper ventilation secured to every length.

Materials.

We propose that the whole of the frontage of the building be faced with specially selected stone from the Grinshill or Darley Dale Quarries. The walls of the areas would be faced with Aston Hall buff bricks, the size of the areas making it unnecessary to use white glazed-brick facing. The roof to be covered with green Westmorland slates. The walls of ground floor, halls, corridors, and entrances to be lined with marble. The architraves, arches, and jambs to doors and windows to be of polished Hopton Wood stone. The columns to staircase and halls to be of red polished granite, the steps and landing of staircase to be of granite, supported by steel joists. The balustrades to be of Hopton Wood stone. The walls of landings and corridors to the upper floors to have faïence dados, the upper portions being finished in plaster.

Walls.—The walls of the principal public offices to be finished in plaster with dados of faïence. The committee-room and principal's private offices to have dados of polished mahogany. The board-room to be panelled to underside of cornice with polished mahogany. The pilasters and columns to be of alabaster. The cornice, panelling above same, and ceiling to be of fibrous plaster. The lavatory walls to be covered with glazed tiles throughout—the divisions between closets being built of glazed bricks.

Floors.—The floors throughout to be of fireproof construction. The steel joists would be protected either by concrete or adamant blocks. The steel stancheons supporting the main girders would be encased with coke breeze concrete, finished with faience in the principal rooms. The surface of floors to hall, corridors, and lavatories to be finished with terrazzo or other similar material. The floors of offices to be laid with dovetailed maple-wood blocks.

Roof.—The roof, principals, and purlins would be constructed of steel encased in coke breeze concrete.

Foundations.—We propose to carry the foundations down to the rock in all cases by means of cement concrete piers, as shown on the sections.

Cost.

We estimate the cost of the building as follows :—

Foundations.—The cubical contents of the foundations measured from the surface of the rock to within 2 ft. of the basement floor amount to 1,700,000 ft. Pricing this at 2d. per cubic foot, the cost works out at 14,166*l.*, or about 2*l.* 12s. 6d. per superficial yard of the portion covered by the building. Towards this amount of 14,166*l.* a sum of at least 1,000*l.* could be obtained by charges bring made to contractors for permission to use the available space as a tip.

Superstructure.—The cubical contents of the whole of the superstructure measured from 2 ft. below the basement floor to half-way up the roof, including all towers, chimneys, and other features, amounts to 4,339,242 cubic feet. Pricing this at 1s. 1½d. per cubic foot—a figure at which we are of opinion the work could be executed—the cost is 244,080*l.*

The total cost is as follows :—

Foundations—		
1,700,000 cubic feet at 2d. per cubic foot.....	14,166*l.*	
Less amount obtained from contractors, say.....	1,000*l.*	
		13,166*l.*
Superstructure—		
4,339,242 cubic feet at 1s. 1½d. per cubic foot		244,080*l.*
Total cost		257,246*l.*

(Including areas and parapet walls.)

Referring to the suggestion made previously in the report as to the manner in which a portion of the spare offices could be built hereafter if this proposal were adopted, the cost of the building would be reduced by 47,000*l.*, making the first cost 211,246*l.* In regard to the clause in your conditions as to the economy to be borne in mind in designing the building, we have relied upon simple and straightforward methods of planning to bring about the desired result."

We think our readers, after inspecting the illustration, will agree with us that it promises, if carried out, to be an important addition to Liverpool architecture, and a building not unworthy of its exceptionally fine and effective site.

COMPETITION DESIGN FOR OLD BAILEY SESSIONS HOUSE.

WE give this week the elevations and plans of the design submitted by Mr. F. T. Baggallay in this important competition.

We have already made our comments on the designs. The following is Mr. Baggallay's description of his intentions in working out the design :—

"The considerations which more than any other affected the planning of this scheme were, the desire to avoid the inconvenient arrangements threatened by the restricted size and irregular shape of the site, and the fear evidently entertained by the promoters of difficulties as to rights of light over adjoining properties. The latter consideration, in particular, seemed to forbid any great height in

the building and the introduction, except in the cell section, of any larger number of stories than the three contemplated in the particulars issued. This difficulty as to extra stories for some of the accommodation made it necessary in the end to abandon the intended great hall. The desire to concentrate the courts, the witnesses' rooms, and the prisoners' cells, and provide the readiest access to the first from the others, as well as to provide a dignified route for the Lord Mayor's procession to the bench of the principal court, together with questions of light and air, chiefly shaped the main plans. A little extra area was gained on the principal floor by projecting the Lord Mayor's parlour over the Sessions House yard, in accordance with permission conveyed in the circulated answers to competitors' questions, to build over the yard on the first floor if it did not interfere with light and air. A good deal of consideration was given to the ventilation of the courts and large witnesses' rooms, with the result that the plans are a good deal cut up and confused by flues. As regards external treatment, the question arose whether the long front should take the comparatively undignified form of a short building with a wing, as suggested by what seemed the best arrangement of plan, whether an inferior arrangement should be adopted to produce a long façade, or whether the latter should be treated to a large extent as a screen or mask; the latter course being eventually chosen. Regret at the loss of Newgate Prison as an architectural feature of London, and a wish to retain some reminiscences of it, largely affected the external architecture; but the recesses in the Old Bailey front, suggested by old Newgate, were chiefly welcomed for their value in giving depth and shape to the building."

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual excursion of the Northern Architectural Association was held on Saturday last. The party travelled by the 9.30 a.m. train from Newcastle, arriving at Leyburn at 11.36. The following members were present, and lunched at the Bolton Arms Hotel: Messrs. W. Glover (President), Newcastle; F. Caws (Vice-President), Sunderland); H. G. Badenoch, J. Bruce, H. C. Charlewood, J. W. Dyson, C. S. Errington, J. Oswald, A. B. Plummer, W. Sheriff, W. R. Story, and C. Walker, Newcastle; G. T. Brown, Sunderland; G. Brumell, Morpeth; J. A. Lofthouse, Middlesbrough. After lunch the party drove to Spennithorne, where the rector conducted them over the church. They then proceeded to Jervaulx and Middleham. At Jervaulx the extensive ruins were inspected and numerous photographs and sketches were taken. At Middleham the rector explained the principal points of interest in connexion with the castle and church. After dining together in the evening the party left Leyburn at 7.28 p.m. At Northallerton an hour was spent on the return journey, and the church was visited.

Books.

The Law of Landlord and Tenant. By SYDNEY WRIGHT, Barrister-at-Law. London: F. P. Wilson, *Estates Gazette* Office.

THIS is a useful, clearly-expressed book, a little in danger, however, of being too extensive for the layman and not quite elaborate enough for the lawyer. As a matter of fact, we are inclined to think it will be found most useful to a lawyer who has a general idea of the law, and yet from time to time needs a handy but fairly full book for reference. The law is now well settled, and very few decisions are in these days given on this subject, which is one which should have the main principles and statutes which refer to it codified; but such work is apparently one which a Government will not take up. The work before us shows how comparatively easy it would be to formulate a code dealing with the law of landlord and tenant. However, until this is accomplished a book such as this of Mr. Wright must be useful to a large number of persons, though the price of it, 12s. 6d., is somewhat high if it is expected to sell among others than lawyers.

Inorganic Chemistry for Advanced Students. By SIR HENRY ROSCOE, F.R.S., D.C.L., LL.D., and ARTHUR HARDEN, Ph.D., M.Sc. (Vict.). London: Macmillan & Co. 1899.

THIS work is intended for the use of the student conversant with the elementary principles of chemistry as set forth in the "Inorganic Chemistry for Beginners," previously written by Roscoe and Lunt.

The greater portion of the book is written on lines long familiar in students' text-books, but it has evidently been brought thoroughly up to date since it describes argon and helium, the cyanide process of gold extraction, and calcium carbide manufacture.

An indication of the progress which is being made in the study of chemical science is afforded by the fact that one chapter is devoted to Thermo-chemistry and another to Electro-chemistry.

Compared with corresponding books of ten or fifteen years ago, the present work demonstrates that even the schoolboy's study of chemistry is becoming more and more a study of the industrial arts and of the laws which regulate both common and uncommon phenomena. Phenomena, which yesterday appeared marvellous or weird and uncanny even to the cultured adult, are to-day discussed and explained with happy confidence by every Board School urchin.

Exercises in Graphic Statics, with Examples of its Application to Practical Designing of Constructional Ironwork. By G. F. CHARNOCK, A.M.Inst.C.E. Part I. J. Halden & Co., Manchester. 1899.

ONE characteristic of the present day is that the chiefs of technical colleges and institutions are exceedingly apt to publish text-books of their own instead of adopting the standard works of other people. No doubt this practice has the recommendation that students are enabled to grasp more fully the views of their teacher if he has written the book or books which form the basis of their home-work. But there is always a possibility that the successful teacher may not be a successful author. So far as the exercise book now under consideration is concerned this reservation need not be made. Mr. Charnock has produced a very useful series of diagrams relative to simple stresses in framed structures, and although the accompanying letterpress is of rather scanty proportions, we presume the student is supposed to obtain such explanations as are necessary by attending lectures at the college with which the author is connected, or by studying some one of the many text-books on graphic statics. The diagrams appear to be carefully worked out, and an interesting sheet is one showing stress diagrams for the Ferris wheel erected in Chicago for the World's Fair in 1893, and of which the larger example at Earl's Court is sufficiently familiar to Londoners.

Hand-book for Gas Engineers and Managers. By THOMAS NEWBIGGING. Sixth Edition. London: Walter King. 1898.

"NEWBIGGING'S HAND-BOOK" has been the familiar friend of the gas manufacturer for so long a period that any recommendation of the book at the present date is superfluous. The present edition is the sixth, and is termed the "centenary" edition, because 100 years or rather more have now elapsed since Murdoch first lighted a building with gas obtained by the distillation of coal. Murdoch is here spoken of as the inventor of coal-gas, but although there is no doubt that his discovery was genuine and that he was really the founder of the gas industry, it must not be forgotten that more than one claim for priority of discovery has been made from the Continent.

The book has been brought well up to date, and contains full information concerning the table photometer recently introduced by the gas referees for official gas-testing. The only important fault we notice is one of omission. The information regarding water-gas is extremely poor. Although water-gas is now largely used throughout the country, this book merely refers to it in two pages devoted to the enrichment of coal-gas. No mention is made of the work of Humphreys and Glasgow, who may be said to have established water-gas manufacture on a successful commercial basis in this country, nor of the Dellwik-Fleischer process, which constitutes the most remarkable method of producing water-gas devised during the present decade. Even in the fairly copious index there is no entry under water-gas, although as "carburetted water-gas" we find one reference. We seek in vain for information regarding the specific gravity, chemical composition, and calorific value of water-gas.

The book is remarkably well printed and handsomely bound. Seldom, in fact, does technical literature appear in such a sumptuous garb.

Rownson's Iron Merchant's Tables and Memoranda, Weights and Measures, &c. London: E. & F. N. Spon, Limited. 1898.

ALTHOUGH prefaced by a few pages of memoranda, this book consists chiefly of tables giving the weight of iron in bars, rivets, bolts, and thin sheets. It is not quite clear why iron plates and solid and hollow half-round bars should be omitted, and bearing in mind the almost universal use of steel in the present day, we are somewhat surprised to find that the only mention of this material is in a table of angles and tees. This table, by the way, is excluded from the index. There is no need for the duplication of the whole of the tables to show the comparative weights of iron and steel, as a note could easily be made from which the differences could be calculated if required. The introductory memoranda might also usefully contain information as to the comparative strength of the two forms of metal. The troublesome variations of metal gauges, "B.G.," "S.W.G.," and "B.W.G." are clearly defined, and a series of tables dealing with equivalent measurements of various kinds is likely to be extremely handy.

The Practical Engineer Pocket-Book for 1899. Manchester: Technical Publishing Company, Limited.

THIS note-book deals principally with mechanical and electrical engineering. These branches of work are treated in a thoroughly practical manner, the different subjects are clearly explained, a large number of drawings are given, and examples of many rules are worked out so that their application may be thoroughly understood by the novice.

A considerable part of the book is devoted to steam boilers, engines, pumps, injectors, condensers, water-heaters, fuel economisers, steam-pipes, the transmission of power, and to various fittings required in conjunction with appliances of this nature. Some hints are also given as to the management and care of steam boilers, steam engines, gas and oil engines, &c. The sections devoted to electrical work are equally to be commended, and we consider the book is one which cannot fail to be extremely useful to architects who are concerned with the installation of mechanical features in public and other buildings, and who are frequently expected to be engineering as well as architectural experts.

Railway and Timber Trades' Measurer and Calculator. By M. B. COTSWORTH. London: McCorquodale & Co., 41, Coleman-street, E.C. 1899.

THIS book of 225 closely-printed pages, packed full of figures, was prepared by the author "at the request of the railway companies" in connection with the revised regulations for timber traffic, which came into operation seven years ago. The copy before us is the second and revised edition. The tables are very comprehensive, well conceived, well arranged, and printed in small but clear type. As far as we have checked them, they are accurate, with the exception of "40" instead of "50" in the first line of the table on page 95. A folding sheet of illustrations is supplied in a pocket in one cover of the book, and assists very much in explaining the author's methods. Three slide-rules are explained and illustrated. The book is about 9 in. high, but only 3½ in. wide, and ⅝ in. thick, so that it can easily be carried in an "inside" pocket. To the timber merchant and builder it cannot fail to be of the greatest service.

BOOKS RECEIVED.

CARDIFF RECORDS: Edited by John Hobson Matthews. Vol. II. (Henry Sotheran & Co.)

THE ARCHITECTURAL ANNUAL. Edited by Albert Kelsey. (Philadelphia.)

THE ENGLISH DIRECTORY AND GAZETTEER FOR 1900. (W. Macdonald & Co.)

TRADE CATALOGUES.

HUSSON'S SAFETY ACETYLENE SYNDICATE, Westminster, sends us a catalogue of acetylene generators, purifiers, and fittings. The syndicate supplies carbide in small or large quantities at from 23s. to 30s. per cwt., which is a great reduction upon the 6d. per lb., or 56s. per cwt., commonly charged to cyclists. As, however, the market price of carbide is from 18*l.* to 20*l.* per ton, a fair margin for profit is still allowed. Some useful details are given in a specification for fixing and connecting acetylene apparatus to be found in the catalogue; but we notice that the familiar but misleading legend, that acetylene "develops an illuminating power fifteen times greater than ordinary coal gas" and has the advantage of a "low cost of production," is repeated in the opening pages of the catalogue. Professor Lewes has in several of his lectures exposed the fallacy of these statements. Acetylene has a great field of usefulness before it, and is already much more extensively employed on the Continent than in this country; but the publication of exaggerated claims must frequently result in keen disappointment to the acetylene patron, and eventually check the progress of the industry. The illustrated list of acetylene burners, brackets, and gas stoves will be serviceable to builders and others desiring to provide a building with a complete acetylene installation.

Messrs. George Howson & Sons send us a large and finely got-up catalogue of their sanitary appliances in improved porcelain earthenware and porcelain enamelled fireclay. There are a number of pedestal closets each with a different name, though in some cases the difference seems principally to consist in the name; sections of nearly all are given; the best is the "Motolite," owing to the depth of water in the basin, but there are several good ones of this type. The type shown in the "Trent" and on the two following pages, with the shallow pan, is a bad one and ought to be discontinued; all these shallow basins are bad, as there is not enough water to cover the excreta. The basins in plain ware, shown further on, are good as far as the sections are shown. The catalogue includes also a number of wash-basins, urinals, fireclay lavatory ranges, &c. There is too much ornament on many of the articles; they would be more suitable if treated in a plainer manner; ornament is out of place in work of this kind. A separate price list is sent with the catalogue.

The Atmospheric Steam Heating Company send us a description, with numerous sectional drawings which are very useful, of their system of steam heating. The following extract from the preface describes what the company claim for their system:—

"A special and exclusive operation made possible by the Atmospheric Steam Heating Company, Limited, system is that the entire system of radiators, or any particular one or more that may be situated in any part of the building, can be heated to a temperature less than the initial temperature of the steam with which they are supplied. That is to say, any degree from 212 deg. Fahr. down to the temperature of the room may be obtained and held as long as desired, without waterlogging or hammering in the system. Thus the same advantages are obtained for steam heating as are derived from the hot-water system, in regulating the degree of warmth to that required for comfort according to the weather, a result in steam heating that cannot be accomplished by any other method. This is effected by maintaining a vacuum in the respective radiators to any degree that may be desired, by which means the tempera ure of the steam is reduced to that normal for the degree of vacuum in the radiator.

A uniform temperature is maintained and held until such time as the steam-valve to the radiator is changed either to a greater or reduced opening, so that the temperature comfort of each room (other conditions of heating surface, &c., being correct) is in direct control of the occupants by a single valve."

Messrs. Ross, manufacturing opticians (London and Paris), send us a catalogue and price list of their drawing instruments, theodolites, and telescopes and binoculars of various types. They show a form of prismatic field-glass in which focussing is done by adjusting the eye-pieces separately for each eye, a very useful arrangement in cases (more frequent than is generally supposed) when the two eyes differ in power or focus.

ALTAR, CHURCH OF THE MOST HOLY ROSARY, TULLOW, CO. CARLOW.—An altar, in memory of the late Bishop of Kildare and Leighlin, Dr. Lynch, was consecrated in this church on the 1st inst. It was designed by Mr. M. J. Buckley, of Youghal.

The Student's Column.

LESSONS IN MODERN ELECTRICAL ENGINEERING.

2.—THE CHOICE OF MOTIVE POWER FOR PRIVATE INSTALLATIONS, COAL, GAS, OIL, OR WATER.

IN attacking the problem of the electric lighting of a country house the most important question to be considered is how we are to get the motive power to drive the dynamo. We must first consider how much power is required. Suppose, for example, that the dynamo is to be able to supply 200 16 c.p. lamps at one time by itself. If it is used in conjunction with a battery of storage cells, then by keeping it running during the day, charging them, and by using them in addition to the dynamo at night, we could supply 400 lamps or even 600 at one time, provided they were not kept alight too long. Now, a 16 c.p. lamp takes 0·6 of an ampere at 100 volts, and therefore consumes $0{\cdot}6 \times 100$, *i.e.* 60 watts. The electrical output of the dynamo must therefore be at least 12,000 watts. Some of the electrical energy of its output will be wasted in heating the mains, and if the mansion is some distance from the power house and cheap power is available, it may be economical to allow a considerable percentage of the total power generated to be wasted in the mains, so as to save the great initial expense entailed by heavy copper conductors. We shall suppose, then, that the dynamo is to have an electrical output of 14 kilowatts. Such a dynamo can now be got which will be capable of giving this output for twelve hours continuously without sparking on the commutator or heating the armature or magnet coils more than 60 deg. Fahr. above the temperature of the surroundings. The mechanical efficiency of a modern dynamo at this load ought to be at least 85 per cent. Hence in the case considered the motive power required to drive the dynamo would be $\frac{100}{85} \times 14$ kilowatts—*i.e.*, 16·5 kilowatts, or 22·1 horse-power. Whatever prime mover we adopt, it must be capable of delivering 22 horse-power to the armature of the dynamo.

The next point to be decided is whether we are to use coal, gas, oil, or water as the source of the required power. In a few cases windmills have actually been employed to turn the dynamos, the energy generated being of course stored in accumulators until wanted. In America there is a private power plant of this description, devised by Mr. Brush, of Cleveland, and capable of supplying the 350 lamps in his house. Although many of the difficulties in utilising wind power have been overcome, yet in this country it is a very variable source of energy, and the initial cost of the necessary plant is very high.

The first cost of a steam-engine and boiler to work at a pressure of 80 lbs. and to give 22 brake horse-power would be between 200*l.* and 300*l.* The cost of a gas-engine of similar power, with all necessary appliances, would be about 200*l.*, and the cost of an oil-engine would be probably over 300*l.* When water-power is available a turbine can be used, but the cost in this case is not easily estimated, as the liability to floods, severe frosts, &c., is very different in different cases, and hence the cost of the necessary earthworks is a very variable quantity. In many cases the first cost of the necessary works is absolutely prohibitive.

The running expenses of a small steam engine and boiler are higher than those for the other methods considered. The constant need of stoking the furnace makes it necessary that an attendant should be always at hand. Again, if it be only used intermittently, as is generally the case in house lighting, it will be very uneconomical, as a great deal of fuel will be burned for very little work done. On the other hand, it runs very steadily when compared to either a gas or an oil engine, and hence is more suitable for driving a dynamo, as slight irregularities in the speed of the dynamo are painfully shown by the flickering of the light given out by the lamps it supplies with energy. When the boiler is in the house itself, the dirt from the coal and ashes is disagreeable all the year round, and the heat is unpleasant in summer.

Gas and oil engines are, as a general rule, the most suitable for small power plants. They work under very similar conditions, require practically the same attention, and occupy the same floor space. When gas is available, a gas engine is always preferable to an oil engine. The source of power in this case comes automatically through the pipes, and no expense is entailed in cartage. Again, it is safer from the fire insurance point of view, as there is always a risk of fire from the vaporiser of an oil engine. Neither gas engines nor oil engines are very suitable for the driving of dynamos which light the lamps directly, as, notwithstanding heavy fly-wheels, the explosions cause the speed to fluctuate slightly and the lights to flicker perceptibly. They are generally used to charge accumulators, which, by themselves, give an absolutely steady light, or, in conjunction with the dynamo, give a satisfactory light. Both kinds of engines are eminently suited for intermittent running, as there is no fuel used during idle hours. For small installations the running expenses of these engines are decidedly less than those of steam engines.

Water wheels and steam or water turbines all have a perfectly constant turning moment or torque, and are, therefore, much superior to the above for direct driving. This is due to the fact that there is no reciprocating action as in steam, gas, or oil engines. The weights of the reciprocating masses in steam engines, owing to their inertia, absorb pressure at the beginning of the stroke and give it up at the end, thus tending to equalise the pressure on the crank pin, provided, of course, that the engine has been well designed. Even, however, if it could be arranged that the pressure were absolutely constant the torque would vary very considerably, and hence the speed always fluctuates. The various forces also called into play strain the foundations considerably. With gas and oil engines the effects of the inertia of the reciprocating masses are much more serious. On the other hand, with turbines everything is balanced and the stresses on the foundations are practically zero.

Steam turbines require a boiler, and may, therefore, be put on the same level with the steam engine as far as floor space and fuel are concerned. They will, therefore, not be economical when used intermittently, but if by means of accumulators a constant load can be guaranteed they are often very useful.

The first cost of a water power plant is greater than in the other cases considered, as the labour of constructing the necessary earthworks is generally a very heavy item. To make even an approximate estimate in any given case is no easy matter, as one has to take into account spells of dry weather, floods, frosts, &c., which require an intimate local knowledge. Still, as the running expenses of a water plant are very small and the machinery is simple, it is always worth considering, and there are many successful plants of this description in this country.

To calculate the amount of horse-power obtainable from a given waterfall it is necessary to know the quantity of water flowing and the height of the fall. To measure the first accurately is difficult, but a useful approximation can easily be made as follows. Find some part of the stream where the section is fairly uniform and the current consequently constant. Measure the time a float thrown in the centre of the stream takes to go down a certain distance. If this be done several times the velocity of the surface of the water at the middle of the stream can be got accurately in feet per minute. The depth of the stream between the two banks should now be measured in feet at equidistant points and the mean taken. This mean depth multiplied by the breadth will give us the area of the cross section in square feet. If we make the assumption that the velocity of the water is the same throughout the cross section, then the flow in cubic feet per minute can be got by multiplying the area of the cross section by the velocity of the stream.

The following formulæ can be used to calculate the maximum horse-power obtainable from a given waterfall:—

$$\text{H.P.} = \frac{Q \times h \times 62{\cdot}4}{33{,}000} = \frac{G \times h \times 10}{33{,}000}$$

Where Q = the area of the cross section of the stream multiplied by the velocity of the stream in feet per minute.
= the number of cubic feet of water that passes any cross section of the stream in a minute.
h = the height of the waterfall in feet.

G=the number of gallons that flow per minute.

The numbers in the above formulæ come from the facts that a cubic foot of water weighs 62·4 lbs., and a gallon of water weighs 10 lbs. 33,000 foot pounds of work per minute, also, is defined as a horse power.

When the water has to be conveyed some distance to the turbine, pipes are necessary. So far as economy in first cost is concerned small pipes are advisable, but in this case there will be a considerable loss in the head (*h*) of water available owing to friction. Tables giving the loss of head due to friction at various velocities of flow will be found in text-books on hydraulics.

The efficiency of a modern turbine varies from 70 to 80 per cent., and of a water-wheel from 50 to 65 per cent. Suppose, for example, that the cross-section of a stream is 10 square feet, and that the velocity of flow in it is 80 ft. per minute. The flow is then 800 cubic feet per minute. Suppose that a head of 20 ft. is available.

$$\text{Then H.P.} = \frac{800 \times 20 \times 62{\cdot}4}{33000}$$

$$= 30{\cdot}3$$

Taking the efficiency of the turbine as 75 per cent., the brake horse power $= 30{\cdot}3 \times \frac{75}{100}$

$$= 22{\cdot}7$$

If a water-wheel had been used whose efficiency was 57·5, then the brake horse power $= 30{\cdot}3 \times \frac{57{\cdot}5}{100}$

$$= 17{\cdot}4$$

As a rule, the less the head of water the greater will be the cost, as turbines or water-wheels of the same power require more water as the pressure gets less, and hence larger machines are required for smaller pressures. A Pelton water-wheel of 48 horse power costs 46*l.* when the head is 200 ft. but if the head be only 80 ft. it will cost 90*l.* It will be seen that the price of a water turbine is small. It is the expense of the connecting-pipes, head and tail race, dam, &c., that make the initial cost of a water-power plant usually so heavy.

In private installations there is often an out-house suitable for the electric power plant. It has to be remembered that gas and oil engines are often noisy, and if the power-house is too near the main building, or if it is actually in it, as in the case of many hotels, then the vibration they cause is sometimes very objectionable, and is often very difficult to cure. For this reason steam turbines are sometimes used, although gas engines would be a little more economical. If the power-house be at some distance away from the main building, then the expense of the main cables required to carry the whole current consumed by the lamps will be high. This expense can be lowered either by using 250-volt lamps and a three-wire system, or by allowing a considerable fraction of the total energy generated to be wasted in heating the mains.

OBITUARY.

MR. THOMAS HARRIS.—We regret to announce the death, on the 10th instant, in his seventy-first year, of Mr. Thomas Harris, F.R.I.B.A., of No. 54, Carlton Hill, N.W., and No. 6, Southampton-street, Bloomsbury. Mr. Harris was elected a Fellow of the Royal Institute of British Architects in 1869. In 1883-4 he carried out some extensive decorations and a re-arrangement of the interior of St. Marylebone parish church, which was built, at a total cost of nearly 60,000*l.*, in 1813-7, after Thomas Hardwicke's revised designs, having been originally intended as a chapel of ease to the (old) parish church (by James Gibbs) in the High-street. Mr. Harris planned and designed the new choir, added the semi-circular apse at the south end of the church (which stands north and south), and built a new organ gallery. He was also the architect of the St. Marylebone Church Club and Institute, erected at a total cost of 9,00*l.*, and opened last January. When a subscription fund had been opened for the alterations at the parish church Mr. Harris devoted considerable pains to the collection of views and memoranda illustrative of the history of the Marylebone gardens and the bowling greens which stood on the ground now occupied by Devonshire-place and the north end of High-street, close by the church; he superintended the construction of a successful reproduction of the principal walk, with its boxes and orchestra, for a bazaar in the Portman Rooms, and printed in 1887, for private circulation, a valuable account of the old gardens.

Mr. R. D. GOULD.—The death of Mr. Richard Davie Gould, architect, who for a considerable period was a borough surveyor at Barnstaple, occurred a few days ago at his residence in Commercial-road of that town. Deceased was 83 years of age. He leaves a widow, one son (Mr. Carruthers Gould, the cartoonist), and two married daughters. The late Mr. Gould designed the pannier market, Barnstaple, the Albert Clock Tower, the Bridge-buildings, and various private buildings. He also prepared the designs of several churches in North Devon. After filling the office of Borough Surveyor for 46 years Mr. Gould was laid aside by a severe attack of paralysis, which confined him to his bed for eight years.

GENERAL BUILDING NEWS.

ST. MARTIN'S CHURCH, UPPER KNOWLE, BRISTOL.—The foundation stone of St. Martin's Church, Upper Knowle, was laid on the 30th ult. The new church is to be built close to the present temporary church on the Wells-road. The style will be Early English, and the church is to be built of pennant stone, with Bath stone dressings, the chancel and altar steps being of red pennant. The completed building will be furnished to accommodate 700, but at present it is proposed to build the chancel, vestries, organ chamber, and two bays of the nave and aisles, to hold 400 people. The east end of the north aisle is to be arranged as a chapel for week-day services. The part now being built will cost over 3,000*l.* Mr. W. V. Gough is the architect, and Mr. Maton Durnford, of Knowle, is the builder.

CATHOLIC CHAPEL, KIRKBY, LIVERPOOL.—The foundation stone of a new building, to serve as a chapel-of-ease to Maghull, was laid on the 1st inst. The site is on the west side of Waddicar-lane, about half-a-mile from Kirkby station. The chapel will be a plain brick building, capable of being converted into a school, set back from the road to leave space for future buildings, and providing accommodation for a congregation of nearly 200. It will consist of a room 60 ft. long and 21 ft. 6 in. wide, a small sacristy, porches, and a covered entrance. The cost of the building will be about 1,000*l.* Messrs. Sinnott, Sinnott, & Powell, of Liverpool, are the architects, and Mr. James Pilkington, of Rainford, the contractor.

WESLEYAN CHURCH, MANSFIELD, NOTTINGHAMSHIRE.—The memorial stone has just been laid of a new Wesleyan Church at the corner of Rosemary-street and Byron-street. It is proposed at present to provide a building in the Early English style, to be built of Loughborough bricks with stone facings, to seat 300 people, but capable, when emergency arises, of being extended to accommodate 600 people, the initial cost, including the land, being estimated at 2,378*l.* Mr. J. E. Goodacre is the architect, and Messrs. Vallance & Blythe are the contractors.

WESLEYAN CHURCH, KENSAL RISE.—The opening of the new Wesleyan Church which has been built in Chamberlayne Wood-road, Kensal Rise, took place on the 5th inst. The church occupies a site close to Kensal Rise railway-station. It is built of pressed brick, with facings and tracery windows of Bath stone, and comprises nave, transepts, and choir, behind which is the organ. The entrance front faces Chamberlayne Wood-road, and there are separate entrances for the gallery, which extends round three sides of the church. The spire at the north-west corner rises to a height of 100 ft. The woodwork in the interior, including the roof, which is waggon-headed in shape, is all of pitch-pine. Seating accommodation is provided on the ground-floor and gallery for 750 persons, and the cost of the structure is about 6,000*l.* The architect is Mr. W. J. Morley, of Bradford, and the contractor for the whole works is Mr. W. Gibson, of Exeter.

CHURCH, SAVILE TOWN, BATLEY, YORKS.—The new church at Savile Town was consecrated recently by the Bishop of Wakefield. The architect was Mr. C. J. Ferguson, F.S.A., of South Kensington, London. The church, which is built of stone, consists of nave, north and south aisles, and minister's and choir vestries. The walls of the nave and aisles are lined internally with brick, the lower portion being covered with green stained pitch-pine boarding. The chancel is lined with Ashlar. Aisles are divided from the nave by arcades, having circular columns, and moulded stone arches. There is a morning chapel on the south side of the chancel, and an organ-chamber on the opposite side, which are separated from the chancel by arcades, the piers of which are ornamented with traceried and carved caps. The south side chancel wall is carried by double piers. The whole of the roofs are of pitch-pine, open timbered. The chancel ceiling is pitch-pine, worked in panels. All the permanent doors of the church, as well as the altar rails and the two altar tables, are of English oak, and the floors, except that of the chancel, which is of stone, have been laid with wood blocks. The heating of the church is on the low-pressure hot-water system; Messrs. Haden & Sons, of Manchester, having supplied the apparatus. The church is lighted by gas from pendants in the nave and chancel, and brackets in the aisles. There are two entrances, viz., the west and south, and also one on the north side for the vestries. The church, as at present finished, provides accommodation for 500 persons, but in erecting the west wall a further extension, at some future date, has been taken into account. Provision has been made for the addition of a square tower on the south side. The contract for the work was let to Messrs. W. & J. Milner, of Mirfield, and this firm sublet the following branches:—Joiners' work, Messrs. Fothergill & Schofield, of Batley Carr; plumber's, Mr. Henry Blackburn, of Dewsbury; tiling and plasterers' work, Messrs. Johnson & Son, of Mirfield; painting, Mr. Henry Roberts, Mirfield; gas fittings, Mr. F. Bottomley, of Savile Town. Mr. G. W. Swift has discharged the duties of clerk of works subsequent to the retirement of Mr. Adamson. The work has cost over 7,000*l.*

NEW WING, CROYDON GENERAL HOSPITAL.—The new wing at the Croydon General Hospital was opened on the 30th ult. It is to be called the Royal Victoria Wing, and was carried out from designs by Mr. Charles Henman at a cost of over 10,000*l.*

WESLEYAN SUNDAY SCHOOLS, BRIDLINGTON.—The foundation stones were laid on the 29th ult. of new Wesleyan Sunday schools, Princess-street, Bridlington. The architect is Mr. S. Dyer. The building will be of buff pressed bricks, with stone dressings, and the style will be in harmony with the adjacent church. Taking the Princess-street side of the block, there will be on the ground floor a minister's vestry and four class-rooms, three of which are convertible into one larger room. Above these there is a church parlour, 33 ft. by 21 ft., and three class-rooms, the largest of which is 21 ft. by 16 ft., with lavatory accommodation. On the Rope-walk side there will be a cellar for the heating apparatus, a kitchen, and two classr-ooms on the ground floor, and above a choir vestry and two class-rooms. There will be a corridor 7 ft. 6 in. wide between the church and the central hall, with a staircase at each end of the same giving access to the upper rooms. The central hall will be paved with wooden blocks set in concrete. Steam or hot water will be used for heating, and the central hall will have two large lantern lights in the roof besides four windows 6 ft. 6 in. wide and 16 ft. deep. Accommodation will be afforded for between 500 and 600 scholars, and there will be separate entrances for boys and girls. The Princess-street frontage is 84 ft., the Rope-walk 50 ft., and the width from one to the other 100 ft.

TEMPERANCE INSTITUTE, READING.—The Palmer Memorial Building in West-street, Reading, was opened on the 27th ult. The building was erected by Mr. Whiting, from plans by Mr. F. W. Albury. The contract price was 4,750*l.*

BUSINESS PREMISES, DUBLIN.—No. 39, Westmoreland-street, Dublin, has been converted into auctioneers' sale rooms and offices for Messrs. Battersby & Co. The structural work was carried out by Messrs. H. & J. Martin, from plans prepared by Mr. Farrell.——Messrs. James H. Webb & Company's premises at 56, Henry-street, have been entirely rebuilt from designs by Mr. George P. Beater, C.E. The shop has a frontage to Henry-street of about 33 ft. The contractors for the works were Messrs. E. & R. Warren.

RECTORY, CHAPELIZOD, DUBLIN.—The new parochial residence on Mulberry Hill, Chapelizod, was opened on the 23rd ult. The building was designed by Mr. A. E. Murray, and erected by Mr. Valentine Falkner.

LIBRARY AND INSTITUTE, BLACKLEY, MANCHESTER.—The Manchester Corporation are about to erect at Blackley, on a plot of land situate in Rochdale-road, buildings to be known as the Blackley Free Library and Institute. The scheme also includes a separate building about to be erected inside the recreation ground as a large covered shelter, 70 ft. by 50 ft., where children may play in wet weather. The library will occupy the front portion of the site, with the main entrance in Rochdale-road, and will contain a reading-room, 46 ft. by 27 ft.; a lending library of the same dimensions, with fittings for 10,000 volumes; and a boys' reading-room, with a separate entrance in the park entrance road, under the lending library, and of the same dimensions. Rooms will also be provided for a librarian and assistants. The institute will occupy the rear portion of the site, and will comprise a public hall 60 ft. by 32 ft., to accommodate about 400 persons, with a main entrance in the park entrance road, a separate entrance in the street overlooking the recreation ground, and an additional emergency exit, together with retiring-rooms. There will also be an adults' recreation-room, 48 ft. by 18 ft.; a games-room for boys, 40 ft. by 30 ft.; two fives courts; and a girls' play-room, 30 ft. by 15 ft. The exterior of the buildings will be faced with red stock bricks, relieved by buff bricks, buff terra-cotta entrances, strings, &c. The floors will be fireproof, and the rooms throughout will be warmed by hot water and lighted by electricity Mr. J. Gibbons, Manchester, is the architect.

SHOPS, HALIFAX.—From the plans of Mr. W. C. Williams, architect, five shops are to be erected immediately adjoining the Post Office. Three of the proposed shops will have a frontage to Commercial-street, whilst the other two will face on a new street from Commercial-street to Southgate. The buildings will be four stories in height, the two upper floors over the shops being arranged for suites of offices. The entrance to the office section will adjoin the Post Office.

NEW RAILWAY BUILDINGS, INVERURIE, ABERDEENSHIRE.—As the new workshops at Inverurie, for the Great North of Scotland Railway Company

are approaching completion, the company have just accepted the following tenders for the erection of a large number of workmen's dwellings on their ground there, viz. :—Mason work, John Smith, Kintore, and George Ogg & Son, Bankhead; near Aberdeen ; carpenter work, Hendry & Keith, Aberdeen ; slater work, S. & W. Christie, Dyce, near Aberdeen ; plumber work, James Laing & Sons, Inverurie ; plaster work, Jas. Seivwright, Inverurie, and Robert Moir, Inverurie ; painter and glazier work, John Williamson and J. & S. Fyfe, both of Aberdeen. These dwellings have to be finished by May, 1901, after which as many more will be proceeded with. No exact figures have been published, but the section just contracted for will, it is supposed, cost from 18,000*l.* to 20,000*l.* The workshops have no architectural pretensions, but are of considerable size, with substantial granite walls, and the total cost will be large. They include :—Erection, fitting, and boiler shop, 289 ft. long by 270 ft. broad ; paint shop, 222 ft. long by 122 ft. broad ; smithy and foundry, 270 ft. long by 102 ft. broad ; and carriage and waggon shop, 362 ft. long by 182 ft. wide, and block containing tyre furnace, &c. All the workshops have roof lights, and the electric light will be introduced. A new passenger station 227 ft. long, in reddish granite, with verandah platforms and goods shed, with siding and loading banks (530 ft. long), have also been constructed near the workshops, and a road has been formed from the new station to the centre of the borough of Inverurie. The architect for the whole scheme is Mr. Patrick M. Barnett, C.E., the company's engineer-in-chief.

NEW WORKHOUSE INFIRMARY AT MERTHYR.—The new workhouse infirmary at Merthyr fronts the south-west, and is built of Ebbw Vale yellow brick with stone dressings from Darbydale, in Derbyshire. On the left are the women's wards, which have two floors, and in which provision is made for forty-six beds, there being an allowance of ground for future extension. The administrative block—a three-floored building—occupies the central position. On the ground floor of this block are two rooms for the nursing staff, a room for the medical officer, a dispensary, and an operating-room. At the rear is the kitchen block, the kitchen being fitted up with steam cooking apparatus fixed by Messrs. Williams & Son, of Cardiff. On the first floor are lying-in and labour wards, containing ten beds, and on the second floor are the nurses' bedrooms. The men's wards, which, like those for the women, have only two floors, are situated on the right, and provide accommodation for seventy beds. The administrative block is connected on either side with the other two by a roofed open corridor. Each particular ward has its separate bath and lavatory facilities. The architect of the infirmary is Mr. E. A. Johnson, of Abergavenny and Merthyr ; and the builders, Messrs. Thomas Watkins & Co., of Swansea. The original contract price for the building, apart from the kitchen block—which was the subject of a separate contract at 1,598*l.*—was 11,097*l.*, but this amount has been exceeded.

CONSTITUTIONAL CLUB, HULL.—A new Constitutional club house has been erected in the Carr-lane section of Anlaby-road, Hull. The architect of the building is Mr. B. S. Jacobs, the contractors are Messrs. E. Good & Sons, and the electrical and hot-water engineers Messrs. King & Co., all of Hull. The contract price will be about 5,000*l.*

NEW HOSPITAL, STOBHILL, GLASGOW.—A new hospital and offices are to be erected at Stobhill. The new buildings are to be built of brick, with stone lintels and sills. The principal entrance to the buildings will be from the south, and facing it is the official block. To the right of this the admission block is placed. In the centre of the site are located the general stores and the kitchen, which are connected with the various wards of the hospital by covered ways. A line of railway runs alongside. The hospital proper is on the east side of the site, and consists of fourteen wards arranged alternately on corridors. Each ward will accommodate twenty-six patients, with an allowance of 1,200 cubic feet per patient. Windows are placed between each of the beds. Between the turrets of the wards verandahs are placed. Sitting-rooms and a small day-room are placed at the end of the ward, and overlooked from the nurses' room. On the west side of the site are four wards for the aged and infirm. There are also four cottages for children under five years of age, and two adjacent cottages for aged married couples. The Nurses' Home is on the east side, with a frontage to Springburn Park. The isolation ward is to the north of the hospital, and here the nurses of this part are accommodated. The mortuary is at the extreme west, near to the existing bridge. The architects for the buildings are Messrs. Thomson & Sandilands.

DRINKING FOUNTAINS, MANCHESTER.—The four drinking fountains erected out of a bequest of the late Alderman Clay are being brought into use. They have been designed by Mr. J. W. Beaumont, architect, of Manchester. The fountains are erected in Crumpsall Park, Boggart Hole Clough, Birch Fields, and Queen's Park.

BUILDING IN LEEDS.—The annual report of Mr. Wm. Towers, Building Inspector to the Leeds Corporation, for the year ended March 24, has just been completed. It shows that during the twelve months 3,059 houses were built, including 16 villas, 59 semi-detached villas, 841 through houses, and 2,143 of the back-to-back description. There were also put up 1,423 buildings of a miscellaneous character. Among these were 1 church (Chapel-Allerton), an addition to a church, 1 chapel, 1 mission-room, 6 schools, 9 additions to schools, 1 hotel, 3 hotels rebuilt, 1 hotel, additions to the workhouse, one Corporation bath, and two additions to the Yorkshire College. The houses, erected in the various wards, range from two in the Central, three in the South, and six in the West, to 398 in the North-east, 352 in the North, 359 in Headingley, 430 in East Hunslet, 319 in West Hunslet, and 334 in the Armley and Wortley Wards. The total plans submitted numbered 2,784, of which 2,169 were approved, showing 9,439 buildings, of which 3,549 were houses. Among the buildings not yet completed are two churches, two additions to churches, two chapels, two mission-rooms, one addition to mission-room, four schools, four additions to schools, one institute (Emmanuel), new Leeds Guardian Offices, three banks, two temperance hotels, two hotels rebuilt, one Masonic hall, and one bodega.

BUILDING IN YORKSHIRE.—The Calverley School Board are about to erect a new school in Wesley-street, Farsley. The plans have been prepared by Mr. W. Bailey, Market-street, Bradford.—A new market is to be erected at Bury on the Fair Ground. Mr. Archibald Neill, of Leeds, is the architect.—What will be known as the Victoria Almshouses are to be erected in the village of Ardsley, near Barnsley. Mr. J. P. Kay, architect, Leeds, has prepared the plans.—Clayton Hospital, Wakefield, is to have a new Nurses' Home. Messrs. Simpson & Richardson, Wakefield, are the architects.—New premises for the Yorkshire Banking Company are about to be erected at Ripon. Messrs. Bedford & Kitson, Leeds, have prepared the plans.—The Leeds Industrial Co-operative Society are going to erect a new store in Gay-lane, Otley.—A new rectory house at Keighley, for the Rev. H. J. Palmer, is to be erected from plans by Messrs. J. B. Bailey & Son, of that town.—*Leeds Mercury.*

METROPOLITAN ASYLUMS BOARD NEW OFFICES.—The new offices on the Thames Embankment for the Metropolitan Asylums Board have just been formally occupied by the Board. The building, the architect of which was Mr. E. T. Hall, was illustrated and described in our issue for June 11, 1898. It is constructed of Portland stone and red brick. Two circular turrets, surmounted by copper domes, flank the main entrance, situated at the angle of the Embankment and Carmelite-street, and similar turrets terminate the front elevation. Mr. Felix was entrusted with the carving. It consists of two main panels around the angle turrets. One represents the Angel of Death, arrested by Esculapius, by whom the sick are conducted to the City of Hygeia ; the other the convalescents carried to the City of Hygeia amid rejoicings. On the summit of the central gable is the figure of Mercy ; beneath it is that of St. Luke ; and on either side stand Hebe and Fate. The entrance floor is 7 ft. above the level of the pavement, and, together with the ground floor, is used as offices, the second and third floors being devoted to committee-rooms and the board-room respectively. These are reached by the main staircase, which is of white marble, with mahogany balustrading. The board-room is octagonal in form, 52 ft. long by 42 ft. in width ; to the base of the lantern the height is about 40 ft. Clearstory windows light the room on six sides, while the Press and public galleries occupy the remaining sides. The fittings are of dark oak, and the ceiling is divided into eight compartments by moulded ribs. The clerk of works was Mr. A. Turner. Messrs. J. Shillitoe & Son, of Bury St. Edmunds, were the contractors, and made all the seats and fittings of the board-room.

SANITARY AND ENGINEERING NEWS.

WATER SUPPLY, BURNHAM, SOMERSETSHIRE.—A Local Government Board inquiry into an application by the Burnham Urban District Council for sanction to borrow 4,500*l.* for purposes of water supply was held by Col. R. W. Slack, R.E., at the Town Hall, Burnham, on the 28th ult. The works were explained by Mr. W. J. Press, Surveyor to the Council.

BOROUGH ENGINEER APPOINTMENT.—Mr. H. Gilbert Whyatt, A.M.Inst.C.E., the newly appointed Borough Engineer and Surveyor of Grimsby, enters upon the duties of the position on Monday, the 16th inst.

THE APPROACHING PUBLIC HEALTH CONGRESS IN ABERDEEN (AUGUST 2 TO 7).—Mr. John Honeyman, R.S.A., architect, Glasgow, will be President of the Architecture and Engineering Section, the Secretaries of which are Messrs. William Kelly, architect, Aberdeen ; A. M. Williamson, M.D., B.Sc., Chief Sanitary Inspector, Edinburgh ; and Banister F. Fletcher, London. Mr. Fletcher will read a paper on "The Architecture of the Twentieth Century." There will also be papers on "Architecture and Hygiene," by Mr. James Souttar, architect, Aberdeen ; "Housing of the Working Classes," by Mr. W. Malcolm Ormiston, architect, Edinburgh ; "An Ideal Workman's Cottage," by Councillor William Cooper, Aberdeen ; "Some Suggestions on Fever Hospital Construction," by Mr. R. Morham, City Architect, Edinburgh ; "The Design and Testing of House Drainage," by Mr. Gilbert Thomson, C.E., Glasgow ; and "Dangers to Public Health from Railway Carriages and Stations," by Mr. E. Durant Cecil, M.Inst.San.Eng., London. In the Municipal and Parliamentary Section Councillor Dunlop, Glasgow, will read a paper entitled "A Plea for More Space In and Around Town Dwellings," and in the Chemistry and Meteorology Section two of the papers to be read will deal with the treatment of sewage.

NEW PIPE FROM THIRLMERE TO MANCHESTER.—The Waterworks Committee of the Manchester Corporation held a meeting on the 5th inst., when the laying of a second pipe from Lake Thirlmere to Manchester was considered, which work has been sanctioned by the City Council. Mr. G. E. Hill, C.E., was appointed consulting and advising engineer, and Mr. Barnett, C.E., as engineer for the undertaking. Mr. Barnett was engaged as engineer under Mr. Hill when the first pipe was laid. These gentlemen were instructed to prepare the specifications and conditions of contract for the material which will be required, and when this has been done tenders will be invited.

WATER SUPPLY, SEWERAGE, &C., LINSLADE.—The Linslade Urban District Council have applied to the Local Government Board for sanction to a loan of 18,000*l.* for works of water supply, sewerage, and sewage disposal in accordance with the estimates and plans prepared by their engineers, Messrs. Sands & Walker, Nottingham.

FOREIGN

FRANCE.—Last week the statue of Lafayette, an offering by Americans to France, was inaugurated in one of the squares of the Carrousel. The statue, by Mr. Bartlett, is however only a temporary one in "staff" ; the permanent monument will be cast in bronze *à cire perdue.*——The interior decoration of the new terminal station of the Orléans railway company is now completed. In the interior of the station are some fine paintings by M. Cormon, representing Biarritz and Amboise. In the entrance portico are fourteen oval panels painted by MM. Joubert, Dameron, and Bourgeois, representing the most picturesque sites traversed or served by the Orléans line. The great central hall, with an arched ceiling in which panels with rosettes alternate with glass panels, suggests the nave of an Italian Renaissance church. M. Lalou, the architect, has succeeded in combining the practical requirements of a railway station with a fine artistic effect.——The immense building proposed for the Conservatoire of Music at Lyons is to be commenced almost immediately.——The Municipality of Biarritz is about to build a new Town Hall, at an estimated cost of 240,000 fr.——A new Casino has been erected at Malo-les-Bains (Nord).——The jury in the competition for the construction of a museum at Clermont-Ferrand has awarded the first premium to M. Dionnet, of Paris ; the second to M. Adams, of Conflans ; and the third to M.M. Clement-Josso and Pradier, of Paris.——The municipality of Oran are about to open a competition for a new theatre.——The jury in the competition for the building of the Church of Saint Joseph at Grenoble have awarded the first premium to M. Vinay, of Paris ; the second to M. Calinaud (Paris) ; a third premium to MM. Wable & Zohel (Paris) ; a fourth to M. Beutz (Nancy) ; and a fifth to MM. Chas. Deville (Paris) and Chas. Meysson (Lyons).——The Government has deposited in the Luxembourg a number of studies by Rosa Bonheur, which have been presented to the State by her legatee Madame Klumpke.——On the 27th the statue to Lavoisier, by M. Barrias, will be unveiled on the Place de la Madeliene, on the axis of the Rue Tronchet. The statue stands on a pedestal decorated with two bronze basreliefs illustrating events in the life of the great chemist.——A monument to the memory of Henri Litolff, the musical composer, has been unveiled at Colombes, near Paris. The monument, of which M. Pallez is the sculptor, consists of a bust of Litolff placed on a stele, against which leans a figure representing the genius of music lamenting the composer.

INDIA.—It is a little amusing to note that the Europeans at Darjeeling are under the impression that the "electric light" attracts thunderstorms ; they allege that since the electric light has been established at that station thunderstorms have not only been more frequent but more violent.——The new Bhandar waterworks in the central provinces was opened recently by the Chief Commissioner. The source of supply is the river Weingunga, in the bed of which a large well has been sunk. The distribution system comprises four miles of pipes.——We learn that the Buddist architectural remains discovered in Chinese Turkestan and on the borders of Tibet are to be investigated for the Indian Government by Dr. Mastein, and that he has already started on the journey.——The Municipality of Bangalore has decided to establish a sewage farm as a means of getting rid of much difficulty in connexion with the sanitation of the city.——The secretarial offices at Barnsdale, Naini Tal, have recently been completed from designs by Mr. H. S. Wildeblood, of that place. The work includes

water-supply and fire protection. The floors are of concrete resting on corrugated sheet iron. An additional block of Departmental offices is also in course of erection near by from designs by the same architect.

UNITED STATES.—Considerable interest has been excited by the action of Mr. Frederick Deilman, an artist who sued for an injunction in the United States Circuit Court to prohibit a Boston firm from selling photographs of a mosaic panel designed by him now in the Congressional reading-room at Washington. American architects have expressed themselves pretty freely on the case, as the artist was employed at the public expense to decorate the public building wherein the panel is exhibited, and the panel itself formed part of the work. The point to be resolved was whether the artist has any copyright in a work executed under the circumstances mentioned, and the Court has decided that he has not.——A Bill has been introduced into the Senate for appropriating 20,000 dols. for the purchase of a replica of the bronze equestrian statue of Washington, designed by Messrs. D. C. French and E. C. Potter, recently presented to the French Government by the women of the United States.——The Hudson River Tunnel is nearly completed; when finished this will give not only land communication between Long Island and New York, but between that city and the country beyond.

MISCELLANEOUS.

APPOINTMENT OF SANITARY INSPECTORS.—The Local Government Board have sanctioned the appointment or reappointment of sanitary inspectors as follows:—Mr. H. Callow, in Islington; Mr. A. Bennett and Mr. W. Freeman, in Holborn.

KING'S COLLEGE AND THE CARPENTERS' COMPANY.—The Architectural Evening Classes at King's College, under the joint auspices of King's College and the Carpenters' Company, continue to be held with success. The following are some of the results of the recent examination held by Professor Elsey Smith and Mr. James Bartlett:—*Building Construction.*—F. Hartnoll, silver medal and 3*l.* in books; F. J. Jones, bronze medal and 2*l.* in books; C. Collyer, certificate of distinction and 1*l.* in books; R. G. Ballatine, H. G. C. Brewer, and A. Bradburn, certificates of distinction; E. H. Wheeler and P. B. Sands, certificates of merit. *Sanitary Science.*—Sir George Faudel-Phillips "medal," G. H. Spears. *Quantities.*—A. Bradburn, certificate of distinction and 3*l.* in books; J. D. Robertson, certificate of distinction and 2*l.* in books; A. Miles, certificate of distinction and 1*l.* in books; F. C. Moon and W. S. Wilson, certificates of distinction; F. Davies, W. Fenn, and H. Byron, certificates of merit. *Constructional Drawing.*—F. J. Jones, certificate of distinction and 3*l.* in books; E. H. Wheeler, certificate of distinction and 2*l.* in books; A. Bradburn, certificate of distinction and 1*l.* in books; H. Spicer, certificate of distinction; F. J. Cox, E. J. Gee, and R. G. Ballatine, certificates of merit.

BIRKBECK BUILDING SOCIETY.—The forty-ninth annual report of this well-known Society shows that, though generally prosperous, it has suffered, like most other institutions, from the influence of the war, and special steps have been taken to meet the conditions arising from this cause. We quote the following from the Report:—"The Society was established in the year 1851 at 29 and 30, Southampton-buildings. Very early in its history it was realised that there were large classes to whom banking facilities were of the greatest value, but for whom no provision, or very inadequate provision, had hitherto been made. As year by year the banking department became more and more appreciated, the need for increased accommodation became absolutely imperative. The business was accordingly removed on January 1, 1900, to the present new freehold building. The directors are gratified to think that the new premises have already proved of great advantage and convenience to the members and depositors. The final portion of this block, having an extensive frontage to Holborn, is now in course of construction; and on the completion, when the various suites of offices and shops are available for tenants, a remunerative and valuable asset will have been created."

ALEXANDRA PARK.—The Bill for the purchase and maintenance of the Alexandra Park and Palace passed through Committee, being unopposed, in the House of Commons last week, and was read a third time on Tuesday, the 10th inst. Contributions towards the purchase moneys are made by the Local Authorities of Islington, 14,000*l.*; Finchley, 3,000*l.*; Barnet, 3,500*l.*; and Wood Green, 35,000*l.*; the Middlesex County Council, 49,000*l.*; and Hornsey Urban District Council, 35,000*l.* The total cost of the scheme is estimated at 150,000*l.*, in respect of the Palace (which cost more than 300,000*l.*), the organ that cost 20,000*l.*, the enfranchisement of twenty-eight acres of leasehold land, and about 160 acres, whereof 138 acres are, by an Act in that behalf, at present preserved from being taken for building purposes. The calculated cost of maintenance and management is 10,000*l.* per annum, against which are set 2,500*l.*, rent of the racecourse, and 5,000*l.* from the refreshment contract. The Palace, which as a place of entertainment has seen a somewhat chequered career, was originally designed by John Johnson (see the illustration in the *Builder* of August 15, 1874). In its construction were used much of the materials, including one of the two domes, dodecagonal at base, and 100 ft. in diameter, of the Great Exhibition building of 1862, of which Captain Fowke, R.E., was the architect. The Palace, opened on May 24, 1873, was destroyed by fire a fortnight afterwards; it was speedily rebuilt, and again opened on May 1, 1875.

SPITALFIELDS MARKET.—We learn that the House of Lords' Committee, presided over by Lord Erne, after hearing Mr. Littler, Q.C., as counsel on behalf of the Corporation of London, have declined to sanction the acquisition by the London County Council of Spitalfields Market. The Council's Bill, which had been passed by a Committee of the House of Commons, proposes to enable them to take over the market, at a cost of 177,500*l.* for the freehold, from its present owners, and to purchase in addition, by arbitration, the interests of the leaseholders. The Corporation, who are the sole opponents of the Council's measure, and promoted a scheme of their own for acquiring the market and its traffic, represented that, in virtue of a charter *temp.* Edward III., they enjoyed the exclusive rights of establishing and carrying on markets within seven miles distance from the City, yet it was alleged by counsel for the Bill that in the history of as many as thirty-five new markets within that limit there is no record of consent given or protest made by the Corporation.

BRISTOL MASTER BUILDERS' ASSOCIATION.—On the 3rd inst. the members of the Bristol Master Builders' Association had their annual excursion, to Brockley Coombe. The members dined at the Royal Pier Hotel, the chair being taken by Mr. George Humphreys (President of the Association). After dinner the President proposed the health of "The Queen," and the toast having been honoured, Mr. W. Church submitted the health of the "Ministers of Religion," coupled with the name of the Rev. H. Dening, who replied. Mr. E. Walters proposed "Kindred Associations." Mr. A. Krauss (National Association) and Mr. E. J. Mercer (Bath Association) acknowledged the toast. Mr. J. Bastow gave "The Ladies," and Mr. Frank Cowlin responded. Mr. G. H. Perrin proposed "The Bristol Master Builders' Association." He said that their president presided over one of the most important industries in the United Kingdom, and long might Bristol be prosperous and their Association exist and have such pleasant gatherings as that one. The President returned thanks, saying that he had been between thirty-five and forty years a member of the Bristol Master Builders' Association, and for the second time he was President. He thought in the future building operations would become more costly; and their Association, after several meetings with the artisans, had established a code of rules which he hoped would be satisfactory. At the present time organisation features seemed to be subservient to the times, and it behoved them to uphold their trade without being obnoxious to those they had to do business with. They hoped to conduct their trade in a fair and equitable manner, and obtain a contract fair to their customers and themselves. Mr. W. H. Brown (solicitor to the Association) also responded. The President submitted the health of their secretary (Mr. H. J. Spear), who responded. This brought the toast list to a termination, and soon after the party were conveyed back to Bristol.

NEW POLICE BUILDINGS, KIRKCALDY.—Messrs. Williamson & Inglis, architects, Kirkcaldy, have been, on the suggestion of Colonel M'Hardy, of the Prison Commission, appointed architects for the new police buildings at Kirkcaldy. Dr. Rowand Anderson, Edinburgh, who was appointed adjudicator on the sixteen plans submitted, placed the plans of Messrs. Scott & Campbell, Edinburgh, first; Mr. Alexander Cullen, Hamilton, second; and Messrs. Williamson & Inglis, third. Colonel M'Hardy, who was asked to look at the three plans and make suggestions, stated that the plan of Messrs. Williamson & Inglis was the one which, in his opinion, most nearly met his views in regard to internal arrangements. The new buildings, which are estimated to cost 16,000*l.*, are to be erected in St. Brycedale-avenue.—*Glasgow Herald.*

TELPHERAGE BY ELECTRIC POWER.—We have received from the Consolidated Telpherage Company, of 20, Broad-street, New York, several illustrated leaflets describing new systems of telpherage which use electricity for their motive power. The details of the various systems seem to have been worked out most successfully. In the aerial system, for example, the electric machinery is kept quite apart from the carrier buckets, and hence the risk of accidental injury is considerably diminished. The motors are ironclad and waterproof, and all the switching devices are completely enclosed. If the speed of the car has to be altered, it is done either by connecting up the motors in different ways or by varying the size of the driving-wheel. Hence there is no gearing, and the operation is, therefore, noiseless. The Telpherage Company has also elaborated an electric tubular despatch system, in which mail matter or parcels can be sent in miniature railways inside underground iron pipes. It is stated that a speed of fifty miles an hour can be obtained by the trucks running inside these pipes, but a speed of twenty or thirty miles an hour is recommended for economical working. Branch lines can be arranged to run into one main trunk line, and the cars are so controlled that a collision is impossible. The method by which each car is made to stop at any desired station on its route is very simple and ingenious. For sending merchandise or mail bags it seems as if these systems might be adopted with advantage in several places in this country.

CAPITAL AND LABOUR.

DISPUTE IN THE NEWCASTLE BUILDING TRADE.—A meeting of the members of the Newcastle, Gateshead, and District Building Trades' Association was held on the 3rd inst., at the offices of the Association, Northumberland-street, Newcastle, to consider the dispute in the building trade. The following decision was come to:—"By a unanimous ballot of the Tyneside District Master Builders' Association and the Gateshead Master Builders' Association, it has been decided that the time has now arrived, considering the state of trade and the fact that they are facing a falling market, before work can be resumed a reduction of 1d. per hour, from 10d. to 9d., shall be made in the wages of operative bricklayers, and a new code of working rules be adopted."

LEGAL.

ACTION FOR INJURIES.

AT the Clerkenwell County Court, before his honour, Judge Edge, Charles Hall, builder's labourer, of Upper Holloway, claimed from William Hall, builder, Upper Holloway, the sum of 50*l.* damages for personal injuries, under the Employers' Liability Act.

Mr. Powell was counsel for the plaintiff and Mr. Ellis Hill, barrister, represented the defendant.

In this action a jury was empanelled, and counsel for the plaintiff mentioned that the defendant was the brother of the plaintiff. It was the duty of the plaintiff to take pieces of wood by a ladder to the scaffolding above. He took up several pieces, one at a time. The man above cried out "Right," and took the pieces of timber from him. While taking up one of the pieces the man cried, "High enough," caught hold of the wood, and then plaintiff commenced to descend the ladder. He found himself knocked off, and fell about 7 ft. to the pavement below, falling on his right wrist, which was broken. He was taken to the Great Northern Central Hospital, but was not detained there. He had not been able to sleep well until the last two or three weeks, owing to the great pain which he had suffered. He had not been able to work since, and he was previously earning 7½d. an hour, or 35s. a week.

Dr. Frank Barnes, of the Great Northern Central Hospital, said he found the plaintiff suffering from a broken wrist, and there was a dislocated middle finger. They were painful injuries, and it would be two months before the hand would be quite right.

Mr. Hill submitted to the Judge that no case had been made out under the Act. There might be some evidence of negligence on the part of Della (the workman who called "All right!"), but he was not a person authorised to give orders, or to whose orders the plaintiff was bound to conform or had been in the habit of conforming.

After some protracted legal discussion, the Judge held that there was no evidence of negligence, and that the man in question was not a person contemplated by the statute. He was sorry to withdraw the case from the jury, and entered a non-suit. He would stay execution for twenty-eight days, pending an appeal.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

5,051.—A CIRCULAR-SAW GUARD: *N. Tailby.*—The top guard is clamped with a set-screw upon a horizontal arm that carries a bracket for holding the riving-knife, and also has a socket which may be clamped at any height by means of a set-screw, and slides upon a rod, the rod being pivotted to a bracket upon the table and clamped upon a slotted arc at any angle desired.

5,088.—DRAWING-SQUARES: *P. Farini.*—The drawing-squares are made of such dimensions as will enable one to make various calculations of measurement both graphically and practically. It is graduated as a protractor and has a scale marked along its hypothenuse; for example, it may be used for describing a square whose area shall equal that of a given circle, or for finding the length of a straight line that shall be equal to the circumference or arc of a circle, by making the projections of the sides upon the hypothenuse as $2r$, and $\frac{r\pi}{2}$, respectively, so that the perpendicular $= r\sqrt{\pi}$, and is therefore equal to the side of a square whose area is equal to that of a circle of which the diameter $= 2r$, whilst $\frac{r\pi}{2}$ = the length of a quadrant of that circle: π being calculated correctly to five decimal places in making the drawing-square.

5,140-1.—MANHOLE-COVERS, FOOT-PLATES, &C.: *H. M. Bigwood and G. A. Hancher.*—Three projecting lugs that are formed upon the cover, which has a

bevelled edge, engage with a gated ring when the lever is turned round; any dirt that passes through the three-slot key-way is collected in a box beneath, and a chain prevents the cover from being removed. Spring-plates bolted on to the cover may be substituted for the lugs. The cast-iron foot-plate has no opening other than one at its end for the down-pipe; a channel—made of stoneware, earthenware, cement, &c.—is fastened to the foot-plate with straps (which are attached to the plate whilst it is being cast), and by a Lewis bolt or an in-turned end, which is cemented or leaded into openings; the connexion is made with the over-lapping flanges, and fillets or lugs and ledges that are to be leaded or cemented, or may be shaped so that they shall become fixed by a wedge-like action.

5,174.—SAWING AND DRESSING OF STONE: *J. McLachlan.*—The inventor has devised a combined machine for both sawing and making straight or curved mouldings. The cross-heads of the frame carry the saws, the frame being reciprocated by means of a connecting rod, and working in guides which can be lowered or lifted by means of four vertical screws, curved or straight guides are used for the moulding cutters, which can be lifted or lowered independently by means of other screws, whilst vertical guides attached to the saw-frame cause the moulding cutters to be reciprocated together with the saws; bevel and spur gearing upon the framework's top drives the feed-screws, and recesses in the edges, together with grooves in the sides of the saws, serve to pass the grit from the hollow faces of the cutters, and therefrom through suitable orifices and recesses in the cutters.

5,177.—DRESSING OF TILES, SLATES, &C.: *T. Adamson.*—The base of the apparatus comprises two side bars having a hook or feet or perforated lugs by which it may be held, and upon the base is pivotted a lever having a cutting edge which may be set at any desired distance from the base by means of a screw and nuts.

5,188.—A REGULATING VALVE FOR SERVICE PIPES: *H. L. Doulton.*—A piston moves within an oil cylinder whose two ends are joined with a passage to a time-screw, and the flushing valve's spindle is joined to the cylinder; when the flushing valve is opened the piston's downward motion is effected by the rising of a disc which covers perforations in the piston, but as the valve becomes closed the disc falls and so enables the piston to rise slowly upwards.

5,201.—LIFT VALVES: *T. W. Scott.*—The handle is formed in one piece with the conical plug of a screw-down tap, and a cap holds the plug securely in its position; the engagement of a screwed nut upon the cap with the spindle serves to screw the plug down upon its seating, or the plug may be made to engage with a screwed pin within it; in a variant arrangement the tap is opened by being screwed downwards, the plug being reversed.

5,204.—CONSTRUCTION OF FLOORS: *J. C. A. Bremer.*—A temporary centering or framework is hung, by means of angular holders fitted with swivelling cranked arms, from the girders, and is freed by turning the cranked arms back from beneath the wedges and cross-bars; one of the holder's prongs is bent at an obtuse angle in order that it may be hooked over the girder's lower a nge, whilst the other prong is utilised as a strut.

5,226.—SKYLIGHTS: *H. G. Bedell and J. Welsby.*—The upstanding frame has drainage-channels, and its sides and upper end are pierced for providing ventilation; the glass is fixed with caps bolted on to the frame's upright flanges, extending beyond the frame so as to exclude water from the ventilation-holes; the glazing bars are formed of sheet metal, a vertical web is made by bending their edges upwards, whilst one edge is bent over the other; for strengthening large skylights cross-bars are set angle-wise in a zig-zag manner between the astragals or longitudinal bars, the glass panes are cut at the same angle, and are fastened with leaden strips which are soldered on to the webs of the cross-bars.

5,295.—WINDOW SASH-BARS: *Aldam, Heaton, & Co. and J. Croft-Smith.*—The sash-bars consist of metal strips or bars, which are of T, +, plain or channelled section, in combination with wooden bars into which they are sunk, being fastened with lugs or screws—a bead is inserted in a channel-shaped bar.

5,328.—METHOD OF CLOSING GATES AND DOORS: *G. R. Goodfellow.*—At the rear of the gate is mounted a mitre-wheel which gears with a similar wheel upon the post; to the latter wheel's spindle or axis is attached an arm that bears an adjustable weight; the weight and arm act as a lever which, working automatically, closes the gate.

5,344.—SCAFFOLDING, &C.: *J. J. Carr.*—Poles, the sides of ladders, beams, planks, and similar materials are strengthened and stiffened with tension wires which are secured to hooks and screws when the planks, &c., are in a bent condition. As the plank is liberated the wires become tightly stretched, and are then fastened in grooves in the planks with staples; metal bands are used for joining two planks, the one sliding upon the other, their length of slide being determined by means of stops or studs.

5,349.—A RANGE-FINDER: *A. B. Brown.*—The angles subtended by distant objects whose heights are either known or assumed are read off with an ordinary sextant; upon the index-arm of the instrument is an adjustable pointer joined to a cam; a projection of a pivotted arm, which is pressed with a spring and carries a mirror that reflects the distant object in a fixed mirror, bears against the cam, and between the cam and the pivotted arm is placed a micrometer adjustment; the plate is graduated by a calculation of the angles subtended by objects whose heights and distances are known; the angular ratio of the reflecting mirror increases each of the angles thus found, the arm and the pointer are then swept through the calculated angle, whereupon the range from which the angle has been computed is represented by the point at which the arm cuts the corresponding "range" arc; when many of the points have been found by those means curves are drawn through them, for the reading-off of the ranges required.

5,405.—APPLIANCE FOR EXTINGUISHING FIRE: *L. Bertling.*—An explosive agent, which may be fixed in the building, and is to be ignited by a fuse, consists of a container made, say, of india-rubber, which is filled with some highly explosive material, mixed, it may be, with a substance—such as sodium carbonate or alum—that is inimical to the production of fire. The holder is placed within a covering case, and the contrivance can be used as a grenade, the fuse being lighted by the flames.

5,456.—BREAKWATERS, BRIDGE PIERS, MOLES, AND OTHER MARINE STRUCTURES: *N. R. Feckel.*—Vertical grooves are fashioned in concrete blocks for taking the hooked ends of embedded iron bars in such a manner as to join each block to a series of vertical iron bars having double channels, and to let the block slide into its place, the bars being held with frames as the blocks are laid. Thin sacks containing cement are placed between the blocks, whose weight bursts the sacks, but waste of the cement is prevented by ribs which are made upon the edges and grooves of the blocks. When the blocks have been laid, pads, fastened to frames, are used to close the interstices, and cement is poured into the openings. For building bridge-piers an iron framework, to be afterwards taken away, is employed, and the blocks are fixed around it.

5,477.—KILNS FOR BURNING CEMENT: *P. O. von Krottnaurer.*—The shaft comprises two parts—a firing portion above a cooling portion made in the shape of a basket, with rings and bars; through the shaft's axis is inserted a tube joined at each end to a reservoir of water; the draught is increased by the escape of steam from the tube. In the coned top of the kiln are doors for the charge, which, when cooled, is broken by a cone at the shaft's base.

5,502.—GAS BURNERS: *A. Heller.*—The inventor's object is to produce atmospheric flames which shall issue in a solid or compact state from the tops of the burners; from the bottom of the gas chamber short air tubes project into the lower ends of the tubes, which hang downwards from the chamber's top, so that an annular gas-way is formed between the overlapping ends of the two sets of tubes.

5,509.—SAWS FOR WORKING STONE: *G. T. Harris.*—The blade of the saw is made in the shape of a wedge, its thicker end being punched out so as to produce teeth which shall be deep enough to include a portion of the taper; at the side on which the dogs hold the blade is rivetted a strengthening plate.

5,530.—PLUG COCKS: *D. J. McOsker, O. F. Garvey, & G. E. Palmer.*—Projections upon a key engage with radial recesses arranged within a gas or other kind of cock; the key is pressed out of engagement with the closed cock by means of a spring which embraces a sliding pin fitted with a collar, and the key is drawn out along a guide which is recessed to correspond with the projections upon the key, and sustains a split-ring spring. The key's movement is restricted with stops; for a non-detachable key its projections are replaced with a pin that is to be forced into radial slots formed in the guide when the valve is closed.

5,544.—DOMESTIC WATER SUPPLY: *R. G. Ballantine and J. Stott.*—The mixing chamber is supplied with hot and cold water through two pipes, the flow being controlled with screw-down valves, whose stems are geared together with bevel wheels; the two valves may be opened at one and the same time by the turning of a hand-wheel. If it be desired to admit the cold water first, different pitches are given to the valve-screws, or the numbers of the teeth in the two bevel wheels are varied.

MEETINGS.

FRIDAY, JULY 13.

Architectural Association of Ireland.—Annual excursion, Kilkenny.

SATURDAY, JULY 14.

Architectural Association.—Third summer visit, to Mr. C. E. Kempe's house (Old Place, Lindfield), and Cuckfield Park.

British Institute of Certified Carpenters.—Visit to Royal Naval College, Greenwich. Boat at Old Swan Pier, 3.30 p.m., London Bridge.

Architectural Association of Ireland.—Annual excursion (concluded). A visit will be paid to Jupoint Abbey, about fifteen miles distant.

MONDAY, JULY 16.

Victoria Institute.—Annual address, by Professor Hull, F.R.S. 4.30 p.m.

WEDNESDAY, JULY 18.

Builders' Foremen and Clerks of Works' Institution.—Half-yearly meeting of the members. 8 p.m.

THURSDAY, JULY 19.

Incorporated Association of Municipal and County Engineers.—Twenty-seventh annual general meeting Westminster Town Hall.

FRIDAY, JULY 20.

Incorporated Association of Municipal and County Engineers.—Annual meeting (continued).

SATURDAY, JULY 21.

Incorporated Association of Municipal and County Engineers.—Annual meeting (concluded).

SOME RECENT SALES OF PROPERTY

ESTATE EXCHANGE REPORT.

June 19.—By WALTON & LEE (at Uttoxeter).

Uttoxeter, Staffs.—Church-st., &c., f.g.r.'s 62*l.* 7s. 6d., reversion in 74 yrs.	£1,835
Various enclosures of land, 59 a. 2 r. 37 p., f.	5,860
Highwood Farm, 68 a. 2 r. 31 p., f.	2,900
The Crakemarsh Hall Estate (parts of), 230 a. 0 r. 30 p., f.	11,640
Cauldon, Staffs.—Various enclosures of land, 33 a. 1 r. 28 p., f.	1,125
Millwich, Staffs.—Garshall Green Farm, 130 a. 0 r. 12 p., f.	4,100

June 22.—By WALTON & LEE (at Buckingham).

Thornborough, Bucks.—Enclosures of land, 18 a. 0 r. 21 p., f.	570
A freehold beerhouse and 4 a. 0 r. 23 p., r. 20*l.*	550
The Manor Farm, 330 a. 0 r. 28 p., f.	10,000

June 28.—By HARPER & SONS (at Malvern).

Malvern, Worcester.—Abbey-rd., The Malvern Promenade Gardens, area 3,438 yds., f.	2,300
Turnpike-rd., Rose Bank, and 3 a. 3 r. 23 p., lifehold, g.r. 9*l.* 5s. 6d., with policies for 1,000*l.*	2,150
The Pale's Farm, 52 a. 3 r. 38 p., f.	6,400

June 29.—By WATERS & RAWLENCE (at Shepton Mallet).

Ditcheat, Somerset.—A freehold dairy farm, 45 a. 1 r. 25 p.	1,950

July 2.—By CHANCELLOR & SONS.

Richmond Hill.—4, Park Hill, u.t. 57 yrs., g.r. 1s., r. 45*l.*	500
Wimbledon.—13 to 16, The Broadway, f., r. 262*l.*	6,650

By G. B. HILLIARD & SON.

Finchingfield, &c., Essex.—A freehold estate, area 601 a. 3 r. 0 p.	4,000
22 freehold cottages, r. 90*l.*	950

By HOLCOMBE, BETTS, & WEST.

Dalston.—St. Mark's-rd., l.g.r. 23*l.* 2s., u.t. 55¾ yrs., g.r. 1d.	430
Sandringham-rd., i.g.r. 29*l.*, u.t. 65¾ yrs., g.r. 1d.	540
Camden Town.—17, Rochester-ter., u.t. 44 yrs., g.r. 6*l.*, e.r. 50*l.*	465

By MAPLE & CO.

Finchley.—Holden-rd., a plot of building land, f.	120
Woodside-av., a freehold building site	1,300
Woodside Grange-rd., a freehold building site	300

By W. B. MASON.

Windsor, Berks.—Thames-st., The Theatre Royal, and a shop adjoining, f.	3,000

By MULLETT, BOOKER, & CO.

Portman-sq.—No. 13, Portman-st., u.t. 21 yrs., 12*l.* 12s., r. 200*l.*	1,680
Hyde Park.—7, Southwick-pl., u.t. 35 yrs., g.r. 2*l.*	805

By TOWERS, ELLIS, & CO.

Edgware-rd.—40 and 41, John-st., f., r. 121*l.*	2,120
Clapham.—Wirtemburg-st., f.g.r.'s 71*l.* 3s. 6d., reversions in 51 and 53 yrs.	2,030
Hyde Park.—236, Gloucester-ter., u.t. 49 yrs., g.r. 2*l.*, r. 100*l.*	1,075

July 3.—By CHINNOCK, GALSWORTHY, & CO.

Westwood, Worcester.—The Westwood Park Estate, 3,077 a. 0 r. 5 p., f.	70,000

By BRACKETT & SONS.

Heathfield, Sussex.—Holme's Hall Farm, 24¾ a., f.	2,800
Mayfield, Sussex.—Stonehurst Estate, 91 a. 2 r. 15 p., f.	7,200
Wadhurst, Sussex.—Two freehold cottages and 1 r. 14 p.	315

By DEBENHAM, TEWSON, & CO.

City of London.—16, Old Change, area 2,000 ft., u.t. 36½ yrs., g.r. 85*l.*, r. 725*l.*	4,000
Chatteris, Cambs.—High-st., freehold residence with factory and workshops, area 10,900 ft., f., r. 60*l.*	1,150

By LEOPOLD FARMER.

Bayswater.—9, Porchester-pl., u.t. 35½ yrs., g.r. 8*l.*, r. 100*l.*	910
St. John's Wood.—37, New-st., u.t. 27 yrs., g.r. 5*l.*, r. 38*l.*	340
27, Townsend-cot., u.t. 17 yrs., g.r. 2*l.*	155
8 and 74, Cochrane-st., u.t. 19 yrs., g.r. 6*l.* 10s.	640
31, Barrow Hill-rd., u.t. 27 yrs., g.r. 5*l.* 10s.	335
Marylebone.—10, 10A, 11, and 12, Weston-pl., u.t. 49 yrs., g.r. 11*l.* 10s.	765
20 and 21, Byron-st., u.t. 41 yrs., g.r. 7*l.* 10s.	430
Paddington.—1, 3, and 5, Waverley-rd., u.t. 47 yrs., g.r. 6*l.* 6s. 2d.	915
Kilburn.—69, 71, and 73, Netherwood-st., u.t. 97 yrs., g.r. 30*l.*	700

By KNIGHT, FRANK, & RUTLEY.

Stoke Trister, Somerset.—Horwood Well House, and 30 a. 2 r. 11 p., f.	1,460

By NOTT, CARTWRIGHT, & ETCHES.

Pimlico.—16, Lupus-st., u.t. 33½ yrs., g.r. 10*l.*, e.r. 75*l.*	640

By ROBINSON & SONS.

Harmondsworth, Middlesex.—Uxbridge-rd., &c., a freehold house and 2½ a.	910

By PHILIP STOCK.

Camberwell.—58a, Hinton-rd., u.t. 73 yrs., g.r. 1*l.* 10s.	200
Peckham.—69, Waghorn-st., u.t. 76 yrs., g.r. 8*l.*, r. 28*l.*	270

By THORNBORROW & CO. (at Penrith).

Ousby, Cumberland.—Shire Hall and Jardine's Farms, 165 a. 1 r. 18 p., f.	5,000
Watermillock, Cumberland.—Grove Foot Estate, 89 a. 1 r. 36 p., f.	1,500

By VIDLER & CLEMENTS (at Ashford).

Wittersham, Kent.—Glyndes Cottage, f.	150
Glyndes Meadow, 5 a. 0 r. 18 p., f.	170

By CRUSO & WILKIN (at King's Lynn).

East Winch, Norfolk.—East Winch Hall Estate, 489 a. 2 r. 24 p., f. £12,000
Lynn-rd., "The Crown Inn," and 5 a. 2 r. 15 p., f. 2,100
Lynn-rd., six cottages and 1 a. 0 r. 15 p., f. 460
Wiggenhall St. Mary the Virgin, Norfolk.—Six enclosures, 48 a. 0 r. 31 p., f. 2,570
A freehold farmhouse and 5 a. 2 r. 37 p. 660

By ALFRED PRESTON (at Ipswich).

Crowfield, Suffolk.—Gostling's Farm, 44 a. 0 r. 22 p., f. 780
Stonham, Suffolk.—The Brewery Farm, 102 a. 3 r. 39 p., f. and c. 1,525

By G. H. MASTERMAN & Co. (at Chichester).

Sidlesham, Sussex.—Keynor Farm, 325 a. 3 r. 2 p., f. } 7,550
Earnley, Sussex.—Marsh Farm, 268 a. 3 r. 3 p., f. }

By FLEURET, SONS, & ADAMS (at Mason's Hall Tavern).

Stratford.—High-street, "The Harrow" p.-h., with goodwill, and nine houses and shops adjoining, u.t. 36 yrs., r. 200*l.* 6,000

July 4.—By BATCHELAR & SON.

Addiscombe.—Lower Addiscombe-rd., The Chestnuts, and two acres, f. 2,000
Chelsea.—8, 10, and 12, Leverett-st., u.t. 8½ yrs., g.r. nil 155

By FOSTER & CRANFIELD.

Broadwater, Sussex.—Broadwater Cottage, f., r. 16*l.* 255

By H. DONALDSON & SON.

Silvertown.—5 to 15 (odd), Constance-st., u.t. 68¼ and 70¾ yrs., g.r. 25*l.* 4s. 1,200
17 to 25 (odd), Constance-st., u.t. 41¾ yrs., g.r. 20*l.* 725
27 to 35 (odd), Constance-st., f. 1,195
1 to 33 (odd), Andrew-st., u.t. 82¼ and 80¼ yrs., g.r. 44*l.* 10s. 1,520
2 to 34 (even) Andrew-st., u.t. 82 yrs., g.r. 42*l.* 10s. 1,410
4 to 26 (even) Gray-st., u.t. 82 yrs., g.r. 36*l.* 1,220
28 to 58 (even), Gray-st., u.t. 70½ yrs., g.r. 40*l.* 1,140
North Woolwich.—90 to 96 (even), Albert-rd., f. 1,460
2, 4, 6, 18, and 20, Storey-st., f. 980

By HUMBERT & FLINT.

Rickmansworth, Herts.—Scots Hill, Highfield, and 5 a. 0 r. 26 p., f. 5,600
Copthorne-rd., a plot of building land, 2 a. 1 r. 10 p., f. 1,300
Bishop's Stortford, &c., Herts.—Wickham Hall Estate, 501 a. 1 r. 37 p., f. 8,250
Little Hadham, Herts.—The Atthouse Farm, 137 a. 3 r. 36 p., f. 2,400
Green Street Farm, 109 a. 0 r. 22 p., f. 1,050
The Acreman Street Farm, 79 a. 0 r. 9 p., f. 875

By FRANK JOLLY & CO.

Mile End.—100 and 102, Bridge-st., u.t. 59 yrs., g.r. 12*l.*, r. 72*l.* 665

By D. SMITH, SON, & OAKLEY.

Ealing.—Birch-grove, three plots of building land, f. 555

By J. J. HILL & WEAVER (at "Horseshoe Hotel").

Kingsland.—High-st., "The Castle," p.-h., u.t. 66½ yrs., g.r. 80*l.*, with goodwill 27,000

By Messrs. SPELMAN (at Norwich).

Norwich.—46, London-st., area 1,560 ft., f. 3,900
Chapel Field-rd., Gothic House, f. 730
1 to 8 and 12 to 18, Howard-st., f. 1,585
72, 74, and 76, Dereham-rd., and workshop in rear, f. 722

July 5.—By F. J. BISLEY & SONS.

New Cross.—59, 61, 63, and 65, Bousfield-rd., u.t. 59 yrs., g.r. 21*l.*, r. 122*l.* 1,290
Bermondsey.—8, 10, 12, 15, and 17, Linsey-st., u.t. 35½ yrs., g.r. 31*l.* 10s. 1,295

By Messrs. CRONK.

Sevenoaks, Kent.—High-st., The Chantry House, and 3 r. 23 p., f. 2,500
Battersea.—29 to 35 (odd), Savona-st., u.t. 53 yrs., g.r. 14*l.* 470

By R. W. DENYER & CO.

Knockholt, Kent.—The Hawthorns and ½ an acre, f. 900

By FAREBROTHER, ELLIS, & CO.

Norwood.—99, Central Hill, f., r. 75*l.* 900
Shenley, Herts.—Well End Lodge Farm, 71 a. 2 r. 31 p., f. 3,500
Buckett's Land Farm, 86 a. 1 r. 28 p., f. 4,020
Aldenham, &c., Herts.—Enclosures of land, 13 a. 0 r. 8 p., f. 600

By C. C. & T. MOORE.

Spitalfields.—86 and 88, Brick-lane, and 2, Booth-st., u.t. 84 yrs., g.r. 110*l.*, r. 335*l.*; also freehold land tax of 5*l.* 19s. 2d. 3,000
Limehouse.—6, Cayley-st., c. 385

By NEWBON, EDWARDS, & SHEPHARD.

Islington.—42 and 44, Brooksby-st., u.t. 8½ yrs., g.r. 10*l.* 10s. 180
Harringay.—Allison-rd., f.g.r. 26*l.*, reversion in 94 yrs. 725
72 to 84 (even), Allison-rd., f., r. 256*l.* 4,010
14 and 18, Vale-rd., u.t. 83 yrs., g.r. 12*l.*, r. 78*l.* 510
Finsbury Park.—14, Endymion-rd., u.t. 77 yrs., g.r. 9*l.*, r. 60*l.* 575
Stoke Newington.—35, Hawksley-rd., u.t. 73½ yrs., g.r. 6*l.* 6s. 220
Dalston.—192, Queen's-rd., u.t. 14 yrs., g.r. 5*l.*, e.r. 42*l.* 190
Holloway.—22, Drayton Park, u.t. 63 yrs., g.r. 10*l.*, r. 52*l.* 510

By STIMSON & SONS.

Peckham.—151, Chadwick-rd., u.t. 68 yrs., g.r. 7*l.* 380
76 to 86 (even), Grenard-rd., u.t. 64 yrs., g.r. 30*l.* 1,390
25 and 27, Graylands-rd., u.t. 64 yrs., g.r. 10*l.* 10s. 480
129, Chadwick-rd., u.t. 66¾ yrs., g.r. 7*l.* 7s. 400
Lewisham.—6, Albion Hill, f., r. 20*l.* 365
Forest Hill.—Honor Oak Park, Meadow Lodge, u.t. 65¾ yrs., g.r. 17*l.* 10s., e.r. 100*l.* 555
Camberwell.—8, Cleveland-st., and 1 and 2, Cleveland-cottages, area 2,725 ft., f., r. 72*l.* 10s. 690
Rotherhithe.—Paradise-st., a freehold building site, area 2,400 ft. 275

By FRED VARLEY.

Holloway.—43, Durham-rd., f., e.r. 40*l.* 430
53, Campbell-rd., f. 430

By JOHNSON, DYMOND, & SON (at Gracechurch-street).

Bethnal Green.—331, Cambridge-road, f. 1,500

By T. LAVINGTON (at Marlborough).

West Kennett, Wilts.—A water meadow, 8 a. 2 r. 0 p., f. £380
A tithe rent charge of 82*l.* per annum 1,200

July 6.—By DEVERILL & HILL.

Rayleigh, Essex.—Station-av., &c., 40 plots of land, f. 513

By HARDS & BRADLY.

Dulwich.—East Dulwich Grove, u.t. 64 yrs., g.r. 5*l.*, r. 50*l.* 580
Greenwich.—34, Burney-st., u.t. 25 yrs., g.r. 8*l.*, e.r. 35*l.* 160

By MAY & ROWDEN.

Pall Mall.—No. 20, f.g.r. 500*l.*, reversion in 44 yrs. 15,100
Piccadilly.—No. 46, u.t. 36½ yrs., g.r. 200*l.*, r. 900*l.* 10,400
Pimlico.—62 and 63, Hindon-st., u.t. 24 yrs., g.r. 10*l.* 10s., r. 140*l.* 1,475

By REYNOLDS & EASON.

Acton.—Mill Hill Grove, two blocks of building land, f. 925
Thornton Heath.—88 and 90, Beulah-rd., u.t. 67 yrs., g.r. 8*l.* 14s., r. 80*l.* 1,000
Peckham.—28, 30, and 32, Hooks-rd., u.t. 53 yrs., g.r. 2*l.* 540
36 to 46 (even), Sunwell-rd., u.t. 52½ yrs., g.r. 9*l.* 1,015
Old Ford.—234, Roman-rd., u.t. 59 yrs., g.r. 4*l.* 10s. 370
Kingsland.—42, Mortimer-rd., u.t. 14 yrs., g.r. 4*l.* 10s. 135
Kensal New Town.—51, 53, and 55, Appleford-rd., u.t. 66 yrs., g.r. 21*l.* 765

By WINDRUM & CLEAVE.

Mile End.—70 to 76 (even), Bridge-st., f. 1,200
33, Streatfield-st., u.t. 72½ yrs., g.r. 4*l.*, e.r. 36*l.* 350
12, Edwards-rd., u.t. 46½ yrs., g.r. 6*l.* 230
Poplar.—8, Market-st., u.t. 30 yrs., g.r. 2*l.* 15s. 265 to 271 (odd), and 277, East India Dock-rd., u.t. 22 yrs., g.r. 75*l.* 1,580
Clapton.—121, Rendlesham-rd., f., r. 28*l.* 505

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

WOOD.*

Per Petersburg standard hundred.

	£ s. d.	£ s. d.
White Sea: first yellow deals	18 0 0	23 0 0
Second do.	16 0 0	18 10 0
Third do.	13 0 0	15 0 0
Battens, 40s., 30s., and 15s. less respectively.		
Petersburg: first yellow deals	15 10 0	19 0 0
Second do.	13 0 0	14 0 0
Battens, 30s. and 20s. less respectively.		
Petersburg, white deals	12 0 0	15 0 0
Do. white battens	11 0 0	12 0 0
Riga, white deals	10 0 0	11 10 0
Swedish mixed yellow deals	16 10 0	21 0 0
" Third do.	14 10 0	17 0 0
" Fourth do.	13 0 0	14 10 0
" Fifth do.	12 0 0	13 10 0
Battens, 30s., 20s., and 10s. less respectively.		
Whitewood, 10 to 20 per cent. less.		
Finnish unsorted yellow deals	11 10 0	12 10 0
Battens, 10s. and 5s. less respectively.		
Whitewood, 5 to 10 per cent. less.		
Norwegian second yellow battens	8 10 0	9 0 0
Third do.	8 0 0	9 0 0
Fourth do.	8 0 0	8 10 0
Whitewood, 10s. less.		
Danzig, Crown Deck deals, per 40 ft. 3 in.	0 15 0	1 5 0
Brack	0 12 0	1 0 0
St. Lawrence Pine deals, &c., per P.S.H.:—		
1st, Bright and Dry, regular sizes	22 0 0	29 0 0
" " oddments	15 10 0	23 0 0
and " regular sizes	17 10 0	20 0 0
" " oddments	12 0 0	16 10 0
3rd, " regular sizes	11 0 0	12 0 0
" " oddments	9 10 0	10 10 0
4th " regular sizes	10 0 0	11 0 0
" " oddments	9 0 0	10 0 0
St. Lawrence Spruce deals, &c.		
First, regular sizes	13 0 0	15 0 0
Second "	10 10 0	11 0 0
Third "	10 5 0	10 10 0
Fourth "	9 15 0	10 5 0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.		
New Brunswick Spruce deals, &c.	10 0 0	12 0 0
Oddments, battens, and fourths	9 10 0	10 0 0
United States pitch pine planks and boards	11 10 0	15 0 0
Prepared Boards, per square		
1¼ by 6½ and 7 in. 1st yellow	11 6	16 6
" " 2nd "	11 0	13 6
1 by 6½ and 7 in. 1st "	10 6	12 6
" " " white	9 6	10 6
" " 2nd yellow	9 6	11 6
" " " white	8 6	9 6
¾ by 6½ & 7 in. 1st & 2nd yellow	8 6	9 6
" " " white	8 0	9 0
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)	9 0	10 0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT (*Continued*).

	£ s. d.	£ s. d.
¾ by 6½ and 7 in. 2nd yellow and white (ditto)	8 0	9 0
¾ by 6½ and 7 in. 1st yellow and white (ditto)	7 0	8 0
¾ by 6½ and 7 in. 2nd yellow and white (ditto)	6 6	7 6
Narrower widths at 10 per cent. less. 3rd quality at 15 per cent. less than 2nd.		
Danzig and Memel Fir Timber—per load		
Best middling	3 13 0	3 15 0
Good middling and Second	3 0 0	3 5 0
Common middling	2 15 0	3 0 0
Undersized	2 15 0	3 0 0
Swedish and Norwegian Balks	2 5 0	2 10 0
Baltic Oak Timber—		
Danzig and Stettin—Large	3 17 6	4 10 0
Small	3 2 6	3 15 0
Quebec Timber per load		
Yellow Pine	4 15 0	6 5 0
Oak	4 0 0	6 0 0
Elm	5 5 0	6 5 0
Ash	3 5 0	4 0 0
Birch	3 17 6	6 5 0
New Brunswick, &c., Birch	3 12 6	4 10 0
American Pitch Pine Timber	2 17 6	4 5 0
Wainscot, per log, 18 cubic ft.—		
Crown (Eng. & Dutch) } nominal	3 0 0	4 0 0
Brack } nominal	2 7 6	3 0 0
Lathwood, per cubic fathom—		
Petersburg	4 0 0	6 10 0
Riga and Danzig	4 10 0	5 10 0
Norway Poles, per ft. run	0 0 1	0 0 1½
Oak Staves, per mille full size pipe		
Memel, Crown	220 0 0	230 0 0
Brack	190 0 0	200 0 0
Danzig	165 0 0	175 0 0
Bosnia, single Barrel (nominal)	28 0 0	30 0 0
United States, Pipe	37 10 0	45 0 0
Hogshead, extra heavy and double extra	30 0 0	35 0 0
Indian Teake per load	10 10 0	16 0 0
British Guiana Greenheart	0 0 0	8 0 0
Mahogany, per foot superficial—		
Honduras, cargo average	0 0 4½	0 0 5½
Nicaragua, do.	0 0 4½	0 0 5½
Tabasco, do.	0 0 4½	0 0 6
Mexican, do.	0 0 4	0 0 4½
Panama, do.	0 0 3½	0 0 4
African, do.	0 0 3½	0 0 5
Cuba, do	0 0 6	0 0 8
St. Domingo, do.	0 0 5	0 0 7½
Do. Curls (good to prime)	0 0 9	0 1 3
Walnut, American (logs)	0 2 9	0 4 9
Do. do. (planks and boards)	0 2 0	0 7 0
Italian, per foot superficial	0 0 3	0 0 7½
Black Sea, per ton	6 0 0	12 0 0
Satin Walnut (logs) per foot cube	0 1 0	0 1 6
" (planks and boards)	0 1 9	0 3 0
Sequoia (Californian redwood), per foot cube	0 1 9	0 2 0
Whitewood, American (logs)	0 1 4	0 1 9
" " (planks and boards)	0 1 9	0 2 9
Quartered oak " " "	0 2 3	0 4 0
Kauri pine (logs)	0 1 9	0 2 0
" " (planks)	0 2 3	0 2 0
Jarrah (planks)	0 2 0	0 2 6
Lancewood spars each, fresh and large	0 5 0	0 7 0
Lancewood spars, ordinary to fair	0 3 0	0 4 0
Degame spars	0 8 0	0 10 0

METALS.

	£ s. d.	£ s. d.
IRON—Pig, in Scotland ton	3 9 6	0 0 0
Bar, Welsh, in London	9 0 0	9 15 0
Do. do. at works in Wales	8 10 0	9 0 0
Do. Staffordshire, in London	9 15 0	11 15 0
COPPER British cake and ingot	75 0 0	76 0 0
Best selected	76 0 0	77 0 0
Sheets, strong	83 0 0	0 0 0
Chili bars	71 15 0	72 0 0
YELLOW METAL lb.	6¾d.	7d.
LEAD—Pig		
Spanish ton	17 10 0	- - -
English Com. Brands	17 15 0	- - -
Sheet, English, 6 lbs. per sq. ft. and upwards	19 5 0	- - -
Pipe	19 15 0	- - -
ZINC—		
Vieille Montagne ton	25 0 0	- - -
Silesian	25 0 0	- - -
Spelter	19 12 6	- - -
TIN—Straits	141 0 0	- - -
Australian	143 0 0	- - -
English Ingots	145 0 0	- - -
Banca	- - -	- - -
Billiton	- - -	- - -

ENGLISH SHEET GLASS IN CRATES.

1 oz. thirds 2¼d. per ft. delivered.
" fourths 2d. " "
21 oz. thirds 3d. " "
" " fourths 2¾d. " "
26 oz thirds 4d. " "
" " fourths 3½d. " "
32 oz. thirds 5d. " "
" " fourths 4½d. " "
Fluted sheet, 15 oz. 2¾d. " "
" " 21 " 3¾d. " "

OILS, &c.

	£ s. d.	£ s. d.
Raw Linseed Oil in pipes, per ton	36 10 0	- - -
" " " in drums, per gal.	0 3 2	- - -
Boiled " " in pipes, per ton	38 10 0	- - -
" " " in drums, per gal.	0 3 5	- - -
TAR—Stockholm barrel	1 6 6	- - -
Archangel	1 0 0	- - -
Turpentine, in barrels, per cwt.	2 0 0	- - -
" in drums, per gal.	0 3 3	- - -
Genuine Ground English White Lead	26 10 0	- - -
Red Lead	22 10 0	- - -
Best Linseed Oil Putty, per cwt.	0 9 0	- - -

[*See also page 45.*

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered
*Reconstruction and Enlargement of Town Hall, &c...	Musselburgh Town Council	25 guineas and 15 guineas	Sept. 30

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Kerbing, Tarpaving, &c., Ballina-street, Forest Hill...	Lewisham Board of Works	Surveyor's Department, Town Hall, Catford, S.E.	July 17
*Kerbing, Tarpaving, &c., Lamos-road, Anerley	do.	do.	do.
*Cottage at their Depôt, Home Park, Lower Sydenham	do.	do	do.
Two Houses, Allerton Bywater	Mr. B. Clayton	R. M. McDowall, Architect, Carlton-street, Castleford	do.
Additions to Farm Buildings, Gordonstown, N.B.....	.....	J. Duncan & Son, Architects, Turriff, Aberdeen	do.
Rebuilding Victoria Hotel, Maesteg, South Wales ...	Messrs. Stiles	P. J. Thomas, Architect, Bridgend	do.
Five Houses, Peak Forest, Derbyshire	Buxton Lime Firms Co.	W. R. Bryden, Architect, 1, George-street, Buxton	do.
Additions to Reformatory, Little Mill, Pontypool.....	.....	D. J. Lougher, Bank Chambers. Pontypool	do.
Building Work, Brassey Institute	Hastings Corporation	P. H. Palmer, Civil Engineer, Town Hall, Hastings	do.
Business Premises, Queen-street, Barnsley	.....	H. Crawshaw, Architect, 13, Regent-street, Barnsley	do.
Boiler House, Shaft, &c., at Workhouse	Watford Guardians	C. P. Ayres, Architect, 14A, High-street, Watford.....	do.
Earthenware Pipe Sewers.....	Guiseley U.D.C.....	H. A. Johnson, Civil Engineer, 15, The Exchange, Bradford	do.
Reservoir, Strichen, Old Deer, N.B.....	....	Jenkins & Marr, Civil Engineers, 16, Bridge-street, Aberdeen	do.
Cast-iron Gas Mains and Laying, Lowfield Heath, Surrey	Horley District Gas Co., Ltd.	H. Webber, 147, Dashwood-house, E.C.....	do.
*Footpaths	Kingston-on-Thames Corporation	.....	July 18
Incubator House, Home Farm, Whitehouse, N.B.....	.....	Jenkins & Marr, Civil Engineers, 16, Bridge-street, Aberdeen.....	do.
Pipe Sewers, House, &c., High Royd Farm	Luddenden Foot Jt. Sewerage Bd.	J. Waugh, Civil Engineer, Sunbridge Chambers, Bradford	do.
Culvert, Maindy	Glamorgan County Council	T. Lloyd Edwards, Surveyor, Bridgend	do.
Alterations to Union Offices	Stoke-upon-Trent Guardians.....	E. E. Scrivener, Howard-place, Shelton	do.
Bridge, near Stowmarket.....	East Stow R.D.C.	G. Harrison, Surveyor, Market-place, Stowmarket	do.
Granite, Quartzite, &c.....	Rochester Corporation	W. Banks, Civil Engineer, Rochester.....	do.
Car Sheds, Thornton Heath and Brighton-road	Croydon Corporation	Borough Engineer, Town Hall, Croydon	do.
Cement	Wimbledon U.D.C.	R. H. S. Butterworth, Council Offices, Broadway	do.
Banking Premises, Ripon.....	Yorkshire Banking Co., Ltd.	Bedford & Kitson, Architects, Greek-street, Chambers, Leeds.....	July 19
Portland Cement...	Newmarket U.D.C.	S. J. Ennion, Deva Chambers, Newmarket	do.
Additions to School, Oxhill, Durham	.....	G. T. Wilson, Architect, 121, Durham-road, Blackhill.....	July 20
Stone Walling, St. Philip's	Birmingham Corporation	J. Price, Civil Engineer, Council House.....	do.
Wall at Sewage Works	Nelson Corporation	B. Ball, Civil Engineer, Town Hall	do.
Store Buildings, Flushdyke, Ossett	.....	J. Kirk & Sons, Architects, Dewsbury	do.
Almshouses, Ardsley, near Barnsley	.....	J. P. Kay, Architect, 34, Prudential-buildings, Leeds	do.
Large Shed, Caledonia Wireworks, Halifax	.....	W. H. D. Horsfall, Architect, Tower Chambers, Halifax	do.
Septic Tank Installation, Limpsfield and Oxted	Godstone R.D.C.	T. C. Barralet, Surveyor, New Oxted	do.
Dispensary Buildings.....	Arklow Guardians.....	B. Manning, Board Room, Workhouse, Arklow	do.
Surveyor's Materials	Middlewich U.D.C.	W. W. Morris, Surveyor, Council Offices	July 21
Hotel Buildings, Truro	Messrs. Mallett & Co.....	W. Swift, Architect, 38, Lemon-street, Truro.....	do.
Alterations to Refuse Destructor Buildings.....	Wrexham U.D.C.	Borough Surveyor, Guildhall, Wrexham	do.
Artizans' Dwellings, Great Passage-street.....	Hull Corporation	J. H Hirst, Architect, Town Hall, Hull	July 23
Sewerage and Drainage Works	Newmarket U.D.C.	Beesley, Son, & Nicholls. Engineers, 11, Victoria-street, S.W.....	do.
Granite Road Metal	Stevenage U.D.C.	W. O. Times, Council Offices	do.
*Paving Works	Limehouse District Board of Wks.	Offices, White Horse-street, Commercial Road East, E.....	do.
Widening Railway, Mirfield to Horbury	L. & Y. Railway Company.....	R. C. Irwin, Hunt's Bank, Manchester	July 24
Widening Railway, Brighouse to Heaton Lodge Junctn.	do.	do.	do.
Two Cottages at Sewage Farm	Tunbridge Wells Town Council ...	W. H. Maxwell, Borough Surveyor, Town Hall.....	do.
Light Railway (7½ miles), Southend-on-Sea	.....	A. Fidler, Civil Engineer, Town Hall.....	July 25
Engine House, &c., London-road	Southend-on-Sea Corporation	do.	do.
Electric Light Buildings	Epsom U.D.C.....	A. E. Pridmore, Architect, 2, Broad Street-buildings, E.C.	do.
Laundry Buildings, Pulham Market, Suffolk	Depwade Guardians.....	A. Clarke, Architect, 126, London-road, Lowestoft	do.
*Stables, &c.	Fulham Vestry	Surveyor's Office, Town Hall, Walham Green	do.
Police Court, &c., Fenny Stratford	Bucks County Council...	R. J. Thomas, Surveyor, County Hall, Aylesbury.....	July 26
Dispensary and Residence, Crumlin, Ireland	Antrim Guardians.....	J. Clark, Union Office, Antrim	do.
Chimney Shaft, Refuse Destructor Buildings, &c.....	Leicester Corporation.....	E. G. Mawbey, Civil Engineer, Town Hall	July 27
*Water Pipes, &c.	Epsom R.D.C.....	See Advertisement...	do.
Sewerage Works	Beaconsfield U.D.C.....	G. H. Charsley, 11, Mackenzie-street, Slough.....	July 28
Additions to Schools, Exhall, near Coventry	.....	T. F. Tickner, Architect. 7, Bishop-street, Coventry	do.
Bandstand, Hillmorton-road	Rugby U.D.C.....	D. G. Macdonald, Surveyor, Council Offices.....	do.
Building Works, Oak Hill	Rawtenstall Corporation	D. Bird, Architect, 7, Brazennose-street, Manchester.....	July 30
Sewage Disposal Works, &c., Whittingham, nr. Preston	Lancs. Asylumn Board	J. P. Muspratt, County Offices, Preston	do.
*Alterations to Sewers	Frimley U.D.C.	W. J. Hodgson, Surveyor, High-street, Camberley	do.
*Hospital	Bury Corporation	Borough Engineer, Bank-street, Bury	July 31
Two Steel Bridges, Park-street	Aylesbury U.D.C.	J. H. Bradford, Surveyor, 2, Rickford's-hill, Aylesbury	Aug. 1
Church Restoration, Tullyallen, nr. Market Hill, Ireland	.....	J. Brown, Architect, 41, Kilmorey-street, Newry...	Aug. 4
*Electric Light Station, &c.	Grays Thurrock U.D.C.	Preece & Cardew, 13, Queen Anne's Gate, Westminster.....	Aug. 9
*Steam Heating and Cooking	Rochdale Guardians.....	Butterworth & Duncan, Architects, Rochdale	No date
Twelve Houses, Clay Cross, Derbyshire	.....	E. Oxley, Architect, Clay Cross.....	do.
Part of New Road, Hillsborough, Yorks.	.....	Fowler & Son, St. James'-street, Sheffield	do.
School, Wesley-street, Farsley, Yorks.	.....	W. Bailey, Architect, 9, Market-street, Bradford	do.
Church, St. George, Darwen	.....	Woods & Thackeray, Darwen	do.
Shops and Auction Rooms, Market-street, Keighley...	.....	J. Judson & Moore, Architects, Bogthorn, near Keighley.....	do.
Two Villas, Knottingley, near Leeds	.....	Tennant & Bagley, Architects, Pontefract	do.
House and Shop, Park-lane, Leeds	.....	D. Dodgson, Architect, 86, Albion-street, Leeds	do.
Asphalting, Queen's Park.....	Manchester Corporation.....	W. H. Talbot, Town Hall	do.
Residence, Boreham-road, Warminster.....	.....	H. F. Price, Architect, Weston-super-Mare	do.
Six Cottages, Mill End, Waterfoot, Lancs.	Mr. R. Barcroft	S. Taylor, Architect, Baltic, Waterfoot.....	do.
Two Houses, Rosemount-lane, Letterkenny, Donegal	.....	M. Gallagher, The Store, Letterkenny	do.
Seven Houses and Shop, Blythe-st., &c., Wombwell	.....	J. Robinson, Wombwell, Barnsley	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Assistant.....	Willesden District Council	85*l.* per annum.....	July 17
*Inspector of Works.....	Lewisham Board of Works	2*l.* 2*s.* per week	do.
*Teacher of Building Construction.....	Middlesex County Council.....	.....	July 21
*Architect's Assistant	Hull Corporation	110*l.* per annum	July 23
*Surveyor and Inspector of Nuisances.....	Heysham U.D.C.	120*l.* per annum	do.
*Surveyor and Inspector of Nuisances	Frimley U.D.C.	175*l.* and 90*l.* per annum	No date
*Clerk of Works.....	Barnes U.D.C.....	.....	do.

PRICES CURRENT (*Continued*).

VARNISHES, &c.

	per gallon. £ s. d.
Fine Elastic Copal Varnish for outside work ..	0 16 6
Best Elastic Copal Varnish for outside work ..	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 6
Best Hard Oak Varnish for inside work	0 10 6
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work....	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 9 0
Berlin Black	0 15 6
Knotting	0 10 0
Best French and Brush Polish	0 10 0

BRICKS, &c.

	s. d.	
Hard Stocks	33 0	per thousand alongside, in river.
Rough Stocks and Grizzles	30 0	,, ,, ,, ,,
Smooth Bright Facing Stocks..	58 0	,, ,, ,, ,,
Shippers	42 0	,, ,, ,, ,,
Flettons.....	30 0	,, ,, at railway depôt.
Red Wire Cuts ..	34 6	,, ,, ,, ,,
Best Fareham Red	71 6	,, ,, ,, ,,
Best Blue Pressed Staffordshire ..	87 0	,, ,, ,, ,,
Best Stourbridge Fire Bricks	84 0	,, ,, ,, ,,
Best White Glazed Stretchers.....	260 0	,, ,, ,, ,,
Headers	240 0	,, ,, ,, ,,
Quoins and Bullnose	340 0	,, ,, ,, ,,
Double Headers..	320 0	,, ,, ,, ,,
Best Dipped Salt Glazed Stretchers and Headers ..	240 0	,, ,, ,, ,,
Quoins and Bullnose	280 0	,, ,, ,, ,,
Double Headers..	280	o per thousand at railway depôt.
Seconds Quality White and Dipped Salt Glazed	40	o per thousand less than best.

	s. d.	
Thames and Pit Sand	8	o per yard, delivered
Thames Ballast	6	9 ,, ,,
Best Portland Cement	35	o per ton ,,
Best Ground Blue Lias Lime..	23	6 ,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 32s. 6d. per ton at rly, dpt.

STONE.

	s. d.	
Ancaster in blocks	2 0	per ft. cube, deld. rly. depôt
Bath ,, ...	1 7	,, ,,
Beer ,, ...	1 6½	,, ,,
Grinshill ,, ...	1 10	,, ,,
Brown Portland in blocks	2 2	,, ,,
Darley Dale ,,	2 1½	,, ,,
Red Corsehill ,,	2 5	,, ,,
Red Mansfield ,,	2 4½	,, ,,
Hard York ,,	2 10	,, ,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	s. d. 2 7	per ft. super at rly. depôt.
,, ,, 6 in. Rubbed Ditto..	2 10½	,, ,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1 3	,, ,,
,, ,, 3 in. self-faced Ditto	0 9	,, ,,

SLATES.

in. in.	£ s. d.	
20×10 best blue Bangor..	11 5 0	per 1000 of 1200 at ry. dep.
,, best seconds ,,	10 15 0	,, ,,
16× 8 best ,,	6 2 6	,, ,,
20×10 best blue Portmadoc	10 18 0	,, ,,
16× 8 ,, ,,	6 0 0	,, ,,
20×10 best Eureka unfading green.....	11 2 6	,, ,,
16× 8 ,, ,,	6 15 0	,, ,,
20×10 Permanent green and Sedan green	10 0 0	,, ,,
16× 8 ,, ,,	5 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles..	41 0	per 1,000 at rly. depôt.
Hip and valley tiles....	3 7	per doz. ,, ,,
Best Broseley tiles	48 0	per 1,000 ,, ,,
Hip and valley tiles....	4 0	per doz. ,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57 6	per 1,000 ,, ,,
Do. ornamental Do.	60 0	,, ,, ,,
Hip tiles.....	4 0	per doz. ,, ,,
Valley tiles.....	3 9	,, ,, ,,
Best Red or Mottled Staffordshire Do. (Peakes) .	50 9	per 1,000 ,, ,,
Hip tiles	4 1	per doz. ,, ,,
Valley tiles.....	3 8	,, ,, ,,

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABBEYDORE (near Hereford).—For the erection of new infirmary, receiving wards, and tramp wards at the workhouse. Mr. E. H. Lingen Barker, architect:—

W. Phillips	£2,660 0	Lewis & Co., Hereford*	£2,460 0
A. J. Howell	2,625 0		
C. Cooke.....	2,494 10	H. Smith.....	2,357 0
W. Gibson	2,480 0		

ABERDEEN.—For the erection of a cottage, Bridgend, Ballogie, for Mr. W. E. Nicol. Messrs. Walker & Duncan, architects, 3, Golden-square, Aberdeen:—

Masonry.—Littlejohn Brothers, Ballater*	£74 15 6
Carpentry and Joinery.—James D. Brebner, Tarland*	108 0 0
Slating.—George Merson, Banchory*	37 19 0
Plastering and Cementing.—George Merson, Banchory*.....	30 9 0

BISHOP AUCKLAND.—For the erection of St. Chad's Roman Catholic School Chapel, Witton Park. Mr. H. T. Gradon, architect, 22, Market-place, Durham:—

Thos. Walton	£1,250 0 0	A. Manley....	£1,133 7 3
G. H. Bell....	1,192 9 0	Geo. Scott* ..	1,070 0 0
Thos. Hilton..	1,136 0 0		

CUPAR (N.B.).—Accepted for additions, &c., to Boston (U.P.) Church, for the managers of the Boston (U.P.) Church, Cupar Fife, N.B. Mr. Henry Bruce, C.E., architect, County-buildings, Cupar Fife. Quantities by architect:—

Heating.—David Honston, Cupar	£72 13 0
Masonry.—James Stark, Cupar-Muir..	68 7 6
Joinery.—H. J. Black, Cupar	22 12 7
Plumbing.—Robt. Bell, Cupar.....	18 1 0
Slating.—Francis Batchelor, Cupar ..	4 14 11
Plastering.—Francis Batchelor, Cupar	2 10 0
Glazing.—Chas. C. Edmond, Cupar ..	4 0 2

DISTINGTON (Cumberland).—For the erection of reading-room, &c. Mr. Thos. Wilson, architect, Distington, Cumberland:—

J. T. Harrison, Distington £300

FARINGDON (Berks).— For the construction of a service reservoir, engine-house, laying cast-iron pipes, &c., for the Rural District Council. Mr. G. Winship, C.E., Abingdon. Quantities by engineer:—

W. Coker ..	£5,666 10 0	H. Roberts, Ludlow*‡ ..	£3,990 0 0
G. H. Tucker	5,648 0 0		
J. Peattie	4,837 0 0	Meredith & Co., Ltd. ..	3,797 4 6
J. Jameson ..	4,750 0 0		
A. Woodhouse	4,451 12 4		

‡ Amended.

Oil Engines and Pumps (in duplicate).

Crossley Bros., Ltd.	£551 10 0
Hornsby & Sons, Ltd., Grantham* ..	497 0 0
Hugh Campbell	485 0 0

HAMPTON (Middx.).—For the execution of street works, Station-road, &c., for the Urban District Council. Mr. J. Kemp, surveyor, Park House, Hampton:—

Mowlem & Co.	£8,644 14 3	Fry Bros., Greenwich*	£7,922 11 5
T. Adams	8,047 11 2		

HANDSWORTH (Birmingham).—For making a new road, with sewer and storm-water drain and accessories, for Mr. J. W. Newcombe. Mr. C. H. Wiltshire, architect:—

J. White, jun.* £3,382 10 0

HANDSWORTH (Birmingham).—For the erection of shoppings and casting-shop, for Messrs. W. Probert & Son. Mr. C. H. Wiltshire, architect:—

A. Mason*.....£382

LETTERSTON (S. Wales).—For the erection of Congregational Chapel, for Ford Congregational Church, Wolfecastle. Mr. Griffiths, architect, New England, Cambrose, R.S.O.:—

W. Rowlands.....	£486 14	D. Thomas, Letterston, Pembroke*	£243 0
Davis & Williams..	323 0		

WALSALL.—For additions to schools, Elmore-green, Bloxwich, for the School Board. Messrs. Bailey & McConnal, architects, Bridge-street, Walsall:—

J. W. Smith	£1,839	W. Wistance	£1,754
J. Dallow	1,822	S. Wootton	1,643
J. Mallin	1,806	Hickin & Sons	1,640
T. Tildesley.....	1,805	T. Mason, Hednesford*	1,512
Brockhurst & Wood.	1,772		

WEST HARTLEPOOL.—For the erection of business premises, for Messrs. M. Robinson & Co. Messrs. Barnes & Coates, architects, Scarborough-street, West Hartlepool:—

G. Leeder*a* ..	£14,084 18 0	Howe & Co., Whitby-st., West Hartlepool * ..	£10,478 0 0
T. Dickinson	12,849 18 0		
Atkinson & Co.	12,067 13 9	Perks & Son*b*	9,783 11 3
J. Davison ..	11,268 5 8		
Watt Bros. ..	10,666 2 2		

a Exclusive of painting, glazing, plumbing, and ironfounding.

b Exclusive of plumbing, glazing, and ironfounding.

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following list of tenders. Mr. T. J. Bailey is the Board's Architect:—

BROOMSLEIGH-STREET.—Providing glazed partition to divide Class-room E, girls' department, also new air-shafts:—

Bristow & Eatwell	£124 0	Marchant & Hirst..	£98 10
F. T. Chinchen....	107 0	G. Neal*	87 0

CAMDEN-STREET.—Providing sliding glazed partitions to divide Class-room C in boys' and girls' departments, including new class-room doorways in connexion with same, also a skylight in boys' and window in girls' departments:—

T. Cruwys	£427	General Builders, Ltd.*	£349
Marchant & Hirst....	385		

FLEET-ROAD.—Removing present partition wall and providing two sliding glazed partitions, in order to divide Class-rooms A and B, senior mixed school, into three rooms; and providing new buttress and doorway in connexion therewith, &c.:—

T. Cruwys.....	£272 0	Bristow & Eatwell	£251 10
F. T. Chinchen....	261 10	Marchant & Hirst*	243 10
Wake & Dean, Ltd.	252 3		

GALLEYWALL-ROAD SCHOOL.—Improvements:—

Boys' Department.—Providing new hall, about 55 ft. by 30 ft., re-dividing, re-stepping, and improving the lighting of three centre class-rooms; providing new staircase, cloak-rooms, lavatory, stock-rooms, and teachers' room.

Girls' Department.—Providing new hall, about 55 ft. by 30 ft., re-dividing, re-stepping, and improving the lighting of three centre class-rooms; providing new staircase, cloak-room, lavatories, stock-room, and teachers' room; and providing drawing class-room, about 47 ft. by 20 ft.

Infants' Department.—Providing new hall, 55 ft. by 30 ft., re-dividing, re-stepping, and improving the lighting of three centre class-rooms; providing new cloak-room, lavatories, stock-room, and teachers' room, and one internal teachers' water-closet; providing lift for coals. Revised accommodation—boys, 352; girls, 354; infants, 400; total, 1,106; net loss of 162 places:—

F. & F. J. Wood ..	£13,498	W. H. Lorden & Son	£12,444
Martin, Wells, & Co.	13,182	Lathey Bros.	12,368
C. Cox	13,177	Johnson & Co. Ltd.	12,202
F. & H. F. Higgs..	12,528	A. White & Co.* ..	11,740

GEORGE-STREET (Boys' and Girls' Departments).—Providing sliding glazed partitions to divide class-rooms E:—

J. C. Chalkley	£212 0	B. E. Nightingale	£165 0
W. V. Goad	198 0	General Builders, Ld.	149 0
London School Furniture Company	179 14	H. Line	149 0
J. Garrett & Son ..	176 0	J. Marsland	145 0
		Wake & Dean, Ltd.*	133 0

GOODRICH-ROAD.—Altering position of an existing partition and providing an additional sliding glazed partition to divide Class-rooms A and B, in boys' and girls' departments, into three rooms. Also a sliding glazed partition to divide Class-room F, infants' department:—

W. V. Goad £350		E. Proctor £270	
G. Kemp	330	Bulled & Co.	249
J. & C. Bowyer	323	Black & Son*	240
H. Line.....	277		

KENMONT-GARDENS SCHOOL.—Enlargement—Boys', 112; girls', 112; infants', 100; total, 324. Providing one sixty and one fifty-six class-room in each department; providing new entrance for infants; providing additional staircase for the girls' department, re-stepping one class-room on each floor; providing additional water-closets for girls, and one each for boys' and girls' teachers:—

McCormick & Sons	£7,438	Johnson & Co., Ltd.	£6,836
Smith & Sons, Ltd.	7,329	J. Appleby	6,752
Wall & Co.	7,268	Lathey Bros.....	6,750
Garrett & Son	7,183	Lorden & Son	6,666
Miskin & Sons.....	6,946	Treasure & Son, London and Shrewsbury*	6,472
Leslie & Co., Ltd...	6,944		
Stimpson & Co.	6,910		
O. Craske	6,895		

LONDON FIELDS.—Providing glazed partitions to divide class-rooms D and F, infants' department; also new doorways and stoves in connexion therewith:—

Johnson & Co.....	£250	Barrett & Power	£195
W. Martin	228	F. Bull*	173
Stevens Bros.	218		

LYHAM-ROAD.—Rebuilding offices (all departments) further away from school building; providing separate pans and traps with connexions to existing drainage; adapting present girls' offices for infants' urinal; removing old covered playground adjoining Brandon-street entrance, including infants' old offices:—

Martin, Wells & Co.	£2,215	E. Triggs	£1,626
W. Downs	1,930	Whitehead & Co., Ltd.	1,625
Falkner & Sons	1,847	W. Hammond*.....	1,595
H. & G. Mallett ..	1,667		

MORNING-LANE.—Providing sliding glazed partition to divide babies' room, and replacing the present kindergarten gallery with a new pattern gallery, &c.:—

G. Barker.....	£290 0 0	Barrett & Power	£214 0 0
London School Furniture Co.	267 10 0	F. Bull	213 0 0
Bruce, Croom, & Co.....	266 16 9	Stevens Bros. ..	208 0 0
		J. Stones, Ulverston*	186 2 6

OLDFIELD-ROAD.—Altering the position of an existing glazed partition and providing a new sliding glazed partition, in order to divide two class-rooms in girls' department into three rooms, including a lobby in connexion therewith:—

F. Britton	£188 0	Barrett & Power ..	£143 0
Stevens Bros.....	154 0	F. Bull*	124 0
W. Martin	149 10		

See also next page.

PRINCESS-ROAD (Boys' and Girls').—Providing sliding glazed partitions to divide Class-room F, &c.:—

J. W. Dixon	£230 0	Marchant & Hirst	£165 0
Spencer & Co.	198 0	Stevens Bros.	149 0
Bristow & Eatwell	147 10	Wake & Dean, Ltd.*	141 10
F. T. Chinchen	178 0		

SAFFRON HILL.—Replacing kindergarten gallery in babies' room with a new pattern gallery:—

Spencer & Co.	£78 0 0	London School Furniture Co.	£65 14 6
Johnson & Co.	72 10 0	Wake & Dean, Ltd.*	64 10 0
W. Martin	66 10 0		

SHILLINGTON-STREET SCHOOL.—Enlargement of school for the blind. Providing one new class-room for fifteen children, re-arranging cloak-rooms, lavatories, and stock-room, and providing additional lavatory fittings:—

Bristow & Eatwell	£1,054 5	General Builders, Ltd.	£679 0
Garrett & Son	769 0	Stevens Bros.	678 0
Maxwell Bros., Ltd.	769 0	F. Bull	627 0
Rice & Son	757 0	E. Triggs*	598 0
W. Hammond	703 0		

SIDNEY-ROAD.—Altering girls' entrance doorway and forming an additional entrance for infants adjoining same, &c.:—

Gibb & Co.	£93	Barrett & Power	£62
Stevens Bros.	67	F. Bull*	60
J. Kybett	65		

SURREY-SQUARE.—Replacing old kintergarten gallery in babies' room with a new pattern gallery, providing stepping to remainder of room, and providing a sliding glazed partition to divide Class-room A, girls' department:—

J. Appleby	£248 0	W. Martin	£165 0
J. C. Chalkley	241 0	Lathey Bros.	159 0
H. Line	199 0	J. Marsland	148 0
London School Furniture Co.	180 0	Wake & Dean, Ltd.*	133 12

TRAFALGAR-SQUARE.—Providing working benches fitted with sinks in the science room of P.T. Centre:—

Unsigned	£176 0	Wake & Dean, Ltd.	£98 10
B. E. Nightingale	171 0	Bruce, Croom, & Co.	97 5
Johnson & Co.	140 0	General Builders, Ltd.	89 0
London School Furniture Co.	101 5		

WOODLAND-ROAD.—Refitting the boys', girls', and female infants' offices with separate pans and traps, removing and rebuilding the male infants' offices, including coal store for schoolkeeper, adapting the present offices for urinal, refitting water-closet for infant teachers adjoining cloak-room, new fixed lavatories for teachers, channels to lavatories, &c., and new drainage scheme:—

Martin, Wells & Co.	£3,010 0 0	J. & C. Bowyer	£2,581 0 0
W. Downs	2,705 0 0	Johnson & Co.	2,522 0 0
Falkner & Sons	2,587 0 0	R. P. Beattie	2,514 6 3
		H. Leney*	1,859 0 0

Cleaning and painting.—The work at the following schools will be done during the summer holidays—July 26 to August 25, 1900. Where exterior as well as interior work has to be done, an additional week will be allowed for the former:—

BERESFORD-STREET.—Painting interior and exterior (all buildings on site):—

Maxwell Bros., Ltd.	£754	E. Triggs*	£550
W. V. Goad	734		

CLIFTON-ROAD.—Painting interior and exterior (old portion and enlargement):—

W. J. Howie	£794 0	S. Musgrove	£564 17
H. Groves	679 0	E. Proctor*	520 0
G. Kemp	598 0		

CREED-PLACE.—Painting interior:—

W. J. Howie	£390 0 0	C. Foreman	£286 0 0
Martin, Wells, & Co.	350 0 0	W. Banks	285 19 6
Thomas & Edge	320 0 0	S. Musgrove	279 12 0
Hayter & Son	293 0 0	C. G. Jones	262 0 0
		E. Proctor*	225 0 0

EGLINTON-ROAD.—Painting interior:—

Thomas & Edge	£445 0	E. Proctor*	£290 0
C. Foreman	407 0	W. Jolly	267 15
Hayter & Son	384 17		

HACKNEY DIVISIONAL OFFICES, MORNING-LANE.—Painting exterior:—

Heard & Co.	£58 10	Silk & Son	£37 10
Barrett & Power	41 0	G. Wales*	33 0

HAWLEY-CRESCENT.—Painting interior:—

T. Cruwys	£392 0	J. W. Dixon	£320 0
Stevens Bros.	372 0	Hodgson & Co.	289 5
Wall & Co.	365 0	W. Chappell*	265 0
Marchant & Hirst	324 0		

LAMB-LANE.—Painting interior (special school):—

Barrett & Power	£81	Collis Willmott	£74
Silk & Son	77	G. Wales*	73

PRINCESS-ROAD.—Painting exterior:—

Hodgson & Co.	£232 10	Wall & Co.	£175 0
R. S. Buckeridge	207 0	Marchant & Hirst	156 0
T. Cruwys	189 13	W. Chappell*	125 0
Densham & Sons	185 0		

SHILLINGTON-STREET.—Painting interior:—

Rice & Son	£567	Garrett & Son	£498
Maxwell Bros., Ltd.	505	Williams & Sons	450
Bulled & Co.	502	E. Triggs*	422

WILTON-ROAD.—Painting interior (old and new portions):—

McCormick & Sons	£597 0	Silk & Son	£487 0
M. Pearson	580 0	G. Wales*	413 10
Barrett & Power	497 0		

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom, at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, &c., 26s. per annum. Remittances (payable to DOUGLAS FOURDRINIER) should be addressed to the publisher of "THE BUILDER," No. 46, Catherine-street, W.C.

SUBSCRIBERS in LONDON and the SUBURBS, by prepaying at the Publishing Office, 19s. per annum (52 numbers) or 4s. 9d. per quarter (13 numbers), can ensure receiving "The Builder," by *Friday Morning's Post*.

THE BATH STONE FIRMS, Ltd.
BATH.
FOR ALL THE PROVED KINDS OF
BATH STONE.
FLUATE, for Hardening, Waterproofing, and Preserving Building Materials.

HAM HILL STONE.
DOULTING STONE.
The Ham Hill and Doulting Stone Co.
(incorporating the Ham Hill Stone Co. and C. Trask & Son, The Doulting Stone Co.)
Chief Office:—Norton, Stoke-under-Ham, Somerset.
London Agent:—Mr. E. A. Williams.
16, Craven-street, Strand.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 42, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. Asphalte Contractors to the Forth Bridge Co.

SPRAGUE & CO., Ltd.,
PHOTOLITHOGRAPHERS,
4 and 5, East Harding-street,
Fetter-lane, E.C.

QUANTITIES, &c., LITHOGRAPHED accurately and with despatch.
METCHIM & SON { 8, PRINCES STREET, ST. GEORGE ST. WESTMINSTER
"QUANTITY SURVEYORS' DIARY AND TABLES," For 1900, price 6d. post 7d. In leather 1/- Post 1/1.

C. B. N. SNEWIN
MAHOGANY, WAINSCOT, WALNUT, TEAK, VENEER, and TIMBER MERCHANT,
Nos. 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, & 17, BACK HILL, HATTON GARDEN, and 29, RAY STREET, FARRINGDON ROAD, E.C.
THE LARGEST STOCK OF ALL KINDS OF WOODS IN EVERY THICKNESS, DRY, AND FIT FOR IMMEDIATE USE.
Telephone, No. 274 Holborn. Tele. Address: "SNEWIN: London."

W. H. Lascelles & Co.,
121, BUNHILL ROW, LONDON, E.C.
Telephone No. 1365, London Wall.
HIGH-CLASS JOINERY,
LASCELLES' CONCRETE
Architects' Designs are carried out with the greatest care.
CONSERVATORIES,
GREENHOUSES,
WOODEN BUILDINGS,
Bank, Office, & Shop Fittings,
CHURCH BENCHES & PULPITS.
ESTIMATES GIVEN ON APPLICATION.

PILKINGTON & CO
(ESTABLISHED 1838),
MONUMENT CHAMBERS,
KING WILLIAM STREET, LONDON, E.C.
Telephone No., 2751 Avenue
Registered Trade Mark.
Polonceau Asphalte.
PATENT ASPHALTE and FELT ROOFING.
ACID-RESISTING ASPHALTE.
WHITE SILICA PAVING.
SEYSSEL ASPHALTE.

DRY PLANKS and BOARDS.
IN ALL KINDS OF HARDWOODS.
MAHOGANY (Cuba, Honduras)
WAINSCOT OAK
PENCIL CEDAR
HONDURAS CEDAR
TEAK
BIRCH
ASH
WHITEWOOD
WALNUT
BROWN OAK
ROSEWOOD
MAPLE B.E., &c., &c.
WM. MALLINSON & CO.,
Offices, 136 and 138, HACKNEY ROAD, LONDON, N.E.
Store Yards: DISS STREET, MENOTTI STREET, DERBYSHIRE STREET, CHESHIRE STREET, HAGUE STREET, BETHNAL GREEN.
PARNELL WHARF: OLD FORD.
LARGE STOCK of
FASCIAS, COUNTER-TOP BOARDS
Always on hand, also VENEERS.
Telephone: 1319, AVENUE.

FRANCIS & Co. LD. NINE ELMS BRAND PORTLAND CEMENT LONDON

The Old Nine Elms Brand.

PORTLAND CEMENT

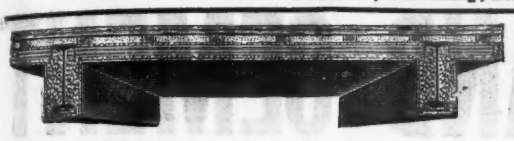
ESTABLISHED 1810.

ROMAN, MEDINA, PARIAN, KEENE'S, PLASTER and WHITING.

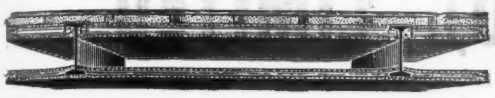
Manufactured by

FRANCIS & COMPANY, LIMITED.

Prize Medals—London, 1851; Philadelphia, 1876; Paris, 1878; Calcutta, 1883; London, 1884; Gold Medal, Paris Exhibition, 1889; Chicago, 1893. Offices: 4, Eastcheap, London, E.C. Wharf: 143, Grosvenor-road, Pimlico, S.W. *Works: Cliffe-on-Thames.*—Tel. No. 132, Avenue.



Panelled Construction, with Ribbed Bars in Steel Stirrups.



FLAT Construction, with Ribbed Bars in Stirrups.

3 FORMS of

COLUMBIAN CONCRETE FIREPROOF FLOORS.

See Catalogue (free on application) for details.
See also Report of British Fire Prevention Committee of our Fire Test made June 14th, 1899.

FLOOR between Main Girders, with heavy Ribbed Bars.

Main Girder Casing, with Concealed Anchors.

COLUMBIAN FIREPROOFING CO. Ltd.

37, KING WILLIAM ST. LONDON, E.C.

VAL DE TRAVERS ASPHALTE

(COMPRESSED OR MASTIC)

Is the best material for Roadways, Footways, Damp Courses, Roofings, Warehouse Floors, Basements, Stables, Coach Houses, Slaughter Houses, Breweries, Lavatories, Tennis Courts, &c. *Full particulars can be obtained from the Offices,*

HAMILTON HOUSE, BISHOPSGATE STREET WITHOUT, E.C.

SZERELMEY STONE LIQUID.

THE ONLY RELIABLE REMEDY FOR DAMP WALLS AND STONE DECAY.

IT HAS STOOD THE TEST OF TIME!

N. C. SZERELMEY & CO., Szerelmey Works, Rotherhithe New-rd., S.E.

SAMUEL WRIGHT & CO.

Crown Works, André Street, Amhurst Road, Hackney, N.E.

FIBROUS PLASTER SLABS.

SAMPLES AND PRICES ON APPLICATION.

BY A STROKE of THE PEN an architect may *Specify* "'best' Sash line," but he will probably not get it unless he insists upon the use of ***THE SAMSON SOLID BRAIDED SASH LINE.*** It has ***TEN-FOLD*** the durability of the ordinary so-called "'best' sash lines" (which term means nothing in particular). The true 'best' sash line, ***The Samson,*** is ***practically same price*** as the "others."

Of all First-class Dealers everywhere. WM. E. PECK & Co. (Inc.), 8, Bradford Avenue, London, E.C.

Patented in England and Abroad. Adopted by Her Majesty's Office of Works,

THOUSANDS IN USE. THE "EIFFEL" PATENT STAIR TREAD, THOUSANDS IN USE.

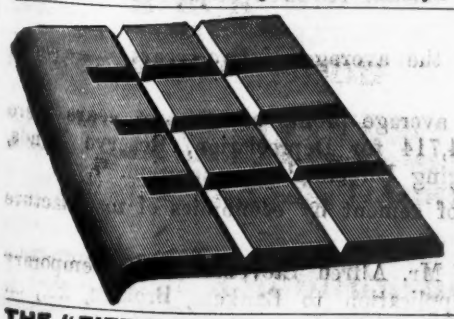
A NON-SLIPPING and DURABLE

STAIR TREAD,

For every description of Iron, Wood, or Stone Steps (either circular or straight), Ship Staircases, Inclined Subways, Shop Entrances, Flooring, &c.

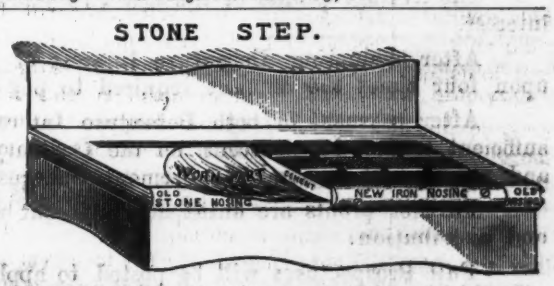
TEN ORDERS HAVE BEEN RECEIVED FROM ONE SOCIETY ALONE.

THE ATTENTION OF ARCHITECTS IS SPECIALLY DIRECTED TO THIS TREAD.—*The Tread is durable, simple, and effective. It is undoubtedly the best medium for prevention of slipping, and can be used with advantage round dangerous machinery, &c.*



NUMEROUS TESTIMONIALS RECEIVED.
AWARDED DIPLOMA AND SILVER MEDAL AT BIRMINGHAM, 1894.

STONE STEP.



Samples and Price Lists on Application. *National Telephone* 1310.

THE "EIFFEL" PATENT STAIR TREAD COMPANY, 72, NORTHUMBERLAND ST., NEWCASTLE-ON-TYNE.

The full Prospectus will be Advertised to-morrow (Saturday).

PRELIMINARY NOTICE.

THE

ASSOCIATED PORTLAND CEMENT MANUFACTURERS (1900), LIMITED.

SHARE CAPITAL—

250,000 5½ per Cent. Cumulative Preference Shares of £10 each	*£2,500,000*
250,000 Ordinary Shares of £10 each	*2,500,000*
	£5,000,000
First Mortgage 4¼ per Cent. Debenture Stock ...	*£3,000,000*

PRESENT ISSUE—

Preference Shares	**£2,450,000**
Ordinary Shares	**£2,450,000**
Debenture Stock	**£2,475,000**

£210,000 of Debenture Stock, £364,770 in Preference Shares, and £248,900 in Ordinary Shares have already been applied for, and will be allotted in full. Further applications for £215,800 Ordinary Shares have also been received, making in all £1,039,470.

The Balance, as follows, will be offered for subscription at par, viz.:—

Debenture Stock.	Preference Shares.	Ordinary Shares.
£1,440,000.	**£1,268,570.**	**£1,168,640.**

The remaining one-third of Debenture Stock and Shares will be issued to the Vendors as part of the purchase-money.

The Debenture Stock will be secured by a mortgage on the Freehold and Leasehold Properties to be acquired, and by a floating charge upon the other assets of the Company.

Messrs. Farebrother, Ellis, & Co. have valued the properties to be acquired (less Mortgages) at	£4,642,000
And the Company will have a Working Capital of	930,000
	£5,572,000
While the present Debenture Issue is limited to	£2,475,000

The average profits of three years have been certified at	£561,103
„ „ „ two „ „ „	639,652
Last year's profits have been certified at	658,356

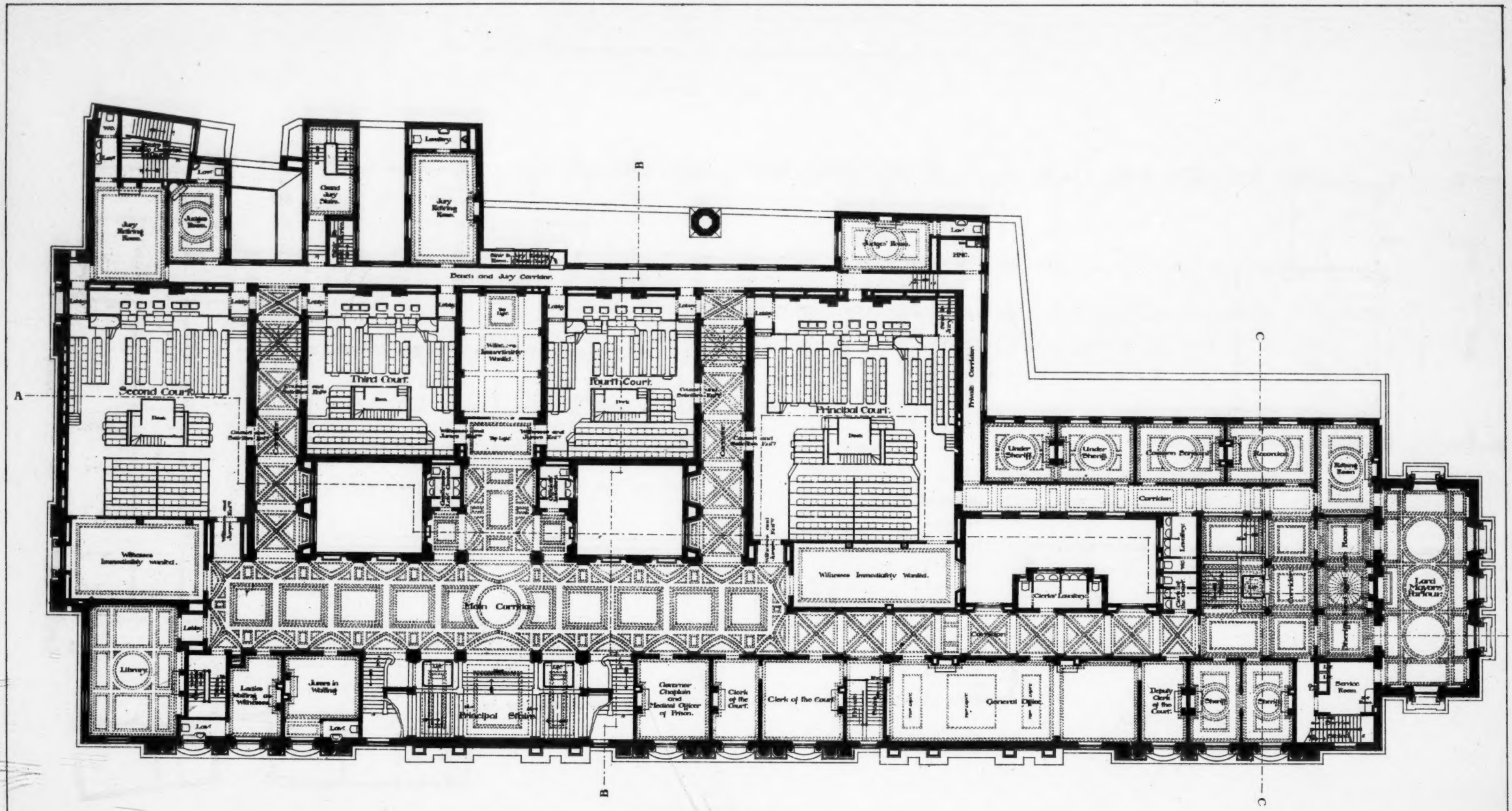
The average profits of the last two years were more than six times the amount required to pay the Debenture interest.

After deducting Debenture Interest of £105,188 the surplus profits on the average of two years were close upon four times the amount required to pay the Preference Interest.

After payment of both Debenture Interest and Preference Dividend the average profits of the two years were sufficient to pay 10 per cent. on the Ordinary Shares, with a margin of £154,714 for Depreciation, Reserve Funds, and payment of General Management Charges, including Directors' and Managing Directors' remuneration.

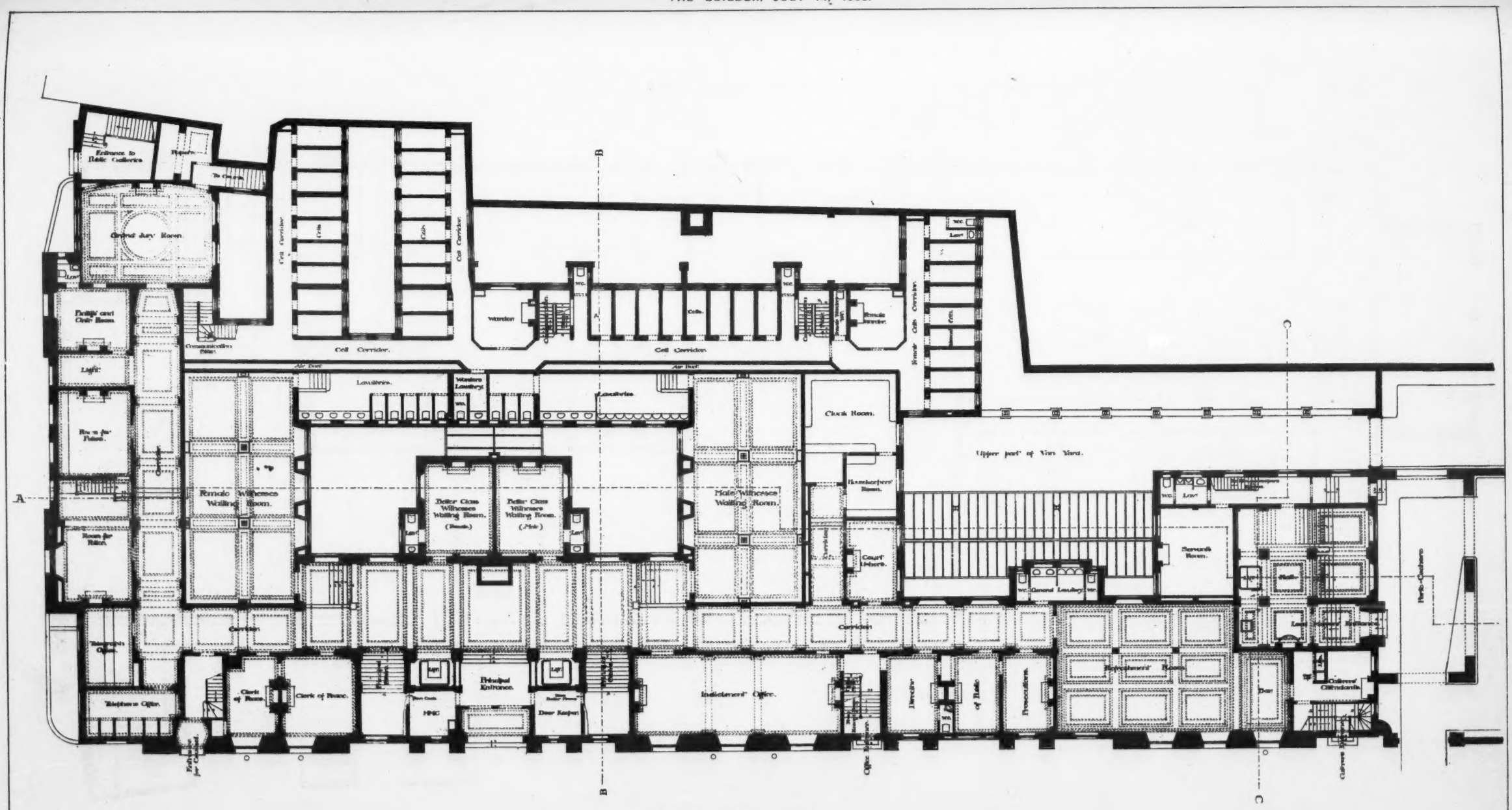
Further profits are anticipated without unduly raising the selling price of cement by economies of manufacture and distribution.

Full Prospectuses will be posted to applicants who write or telegraph to Mr. Alfred Stevens at the temporary offices of the Company, 3, Tokenhouse-buildings, London, E.C., or on personal application to Bankers, Brokers, &c., on Saturday next. Telegraphic Address, "Sitfast," London.


Second Court.
Third Court.
Fourth Court.
Principal Court.
Witnesses Immediately Waiting.
Main Corridor
Library
Ladies Waiting and Witnesses
Jurors in Waiting
Principal Efficers
Grand Jury Retiring Room
Jury Retiring Room
Petty Jury Retiring Room
Judges' Robing Room
Judges' Room
Barristers' Robing Room
Counsel's Consultation Room
Witnesses Assembling Waiting
Witnesses Immediately Waiting.
Counsel's Consultation Room
Counsel's Consultation Room
Counsel's Consultation Room

INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

OLD BAILEY SESSIONS HOUSE COMPETITION.—DESIGN SUBMITTED BY MR. F. T. BAGGALLAY, F.R.I.B.A.

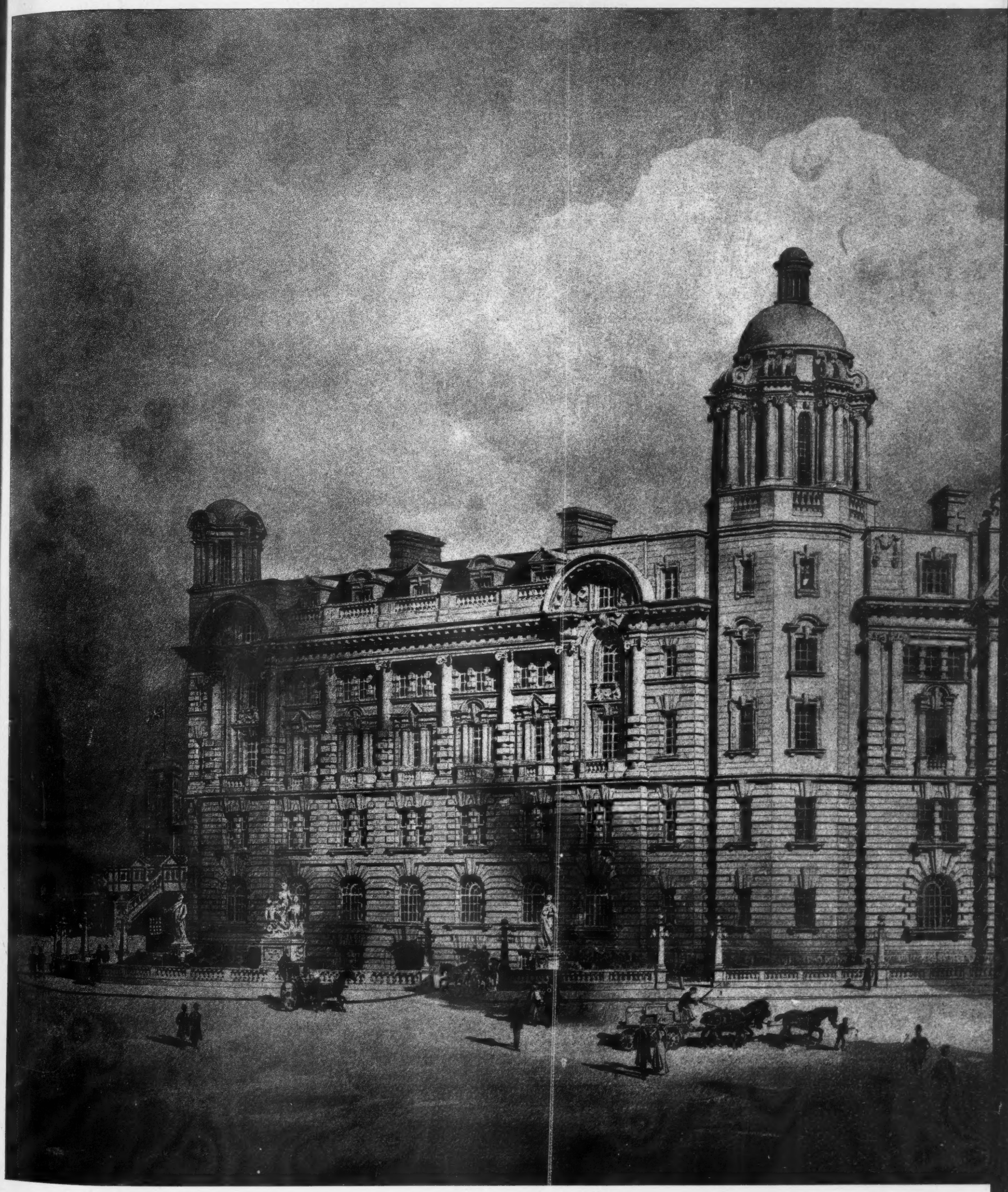


GROUND FLOOR PLAN

SCALE OF FEET.

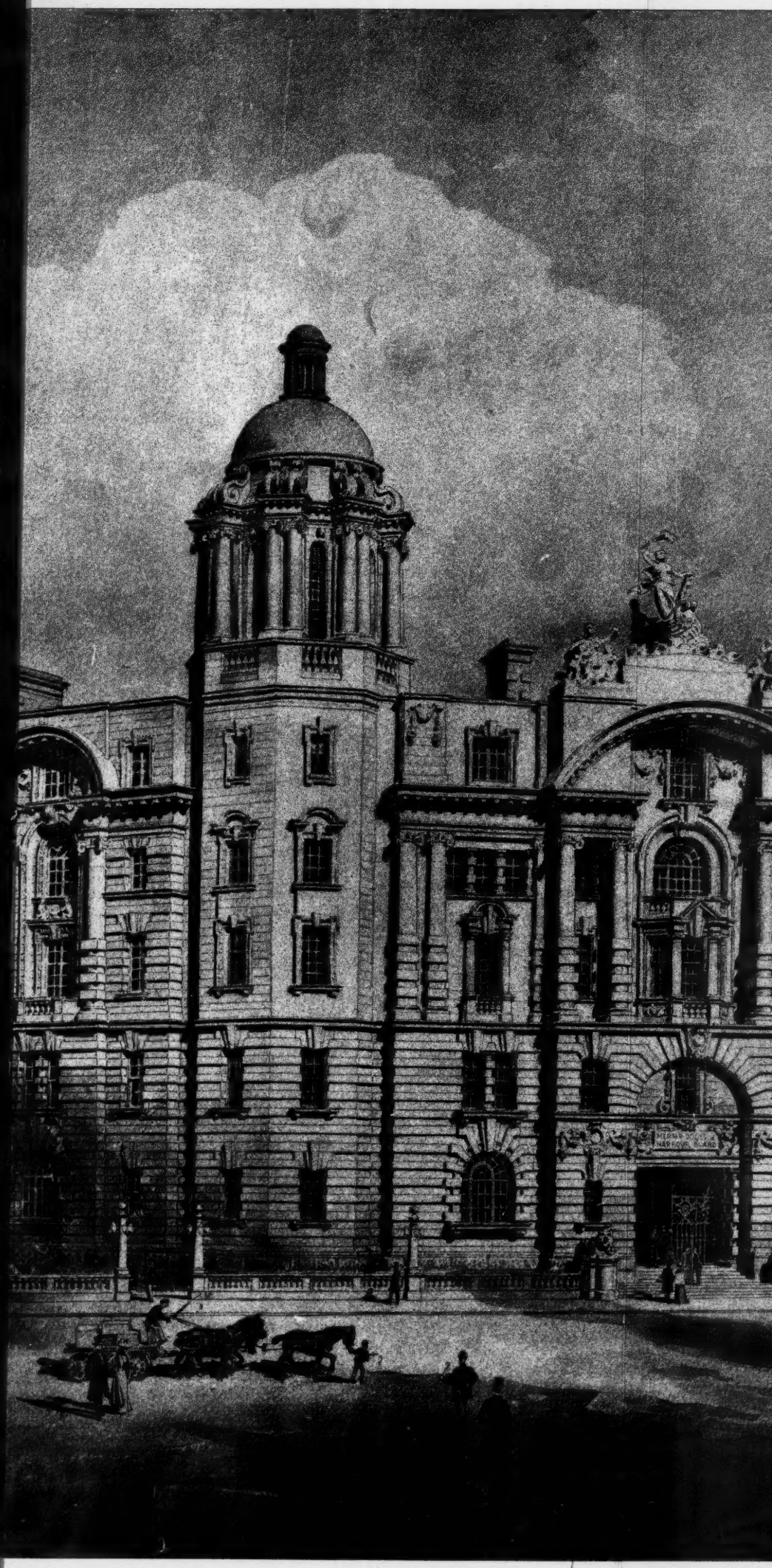
INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

OLD BAILEY SESSIONS HOUSE COMPETITION.—DESIGN SUBMITTED BY MR. F. T. BAGGALLAY, F.R.I.B.A.

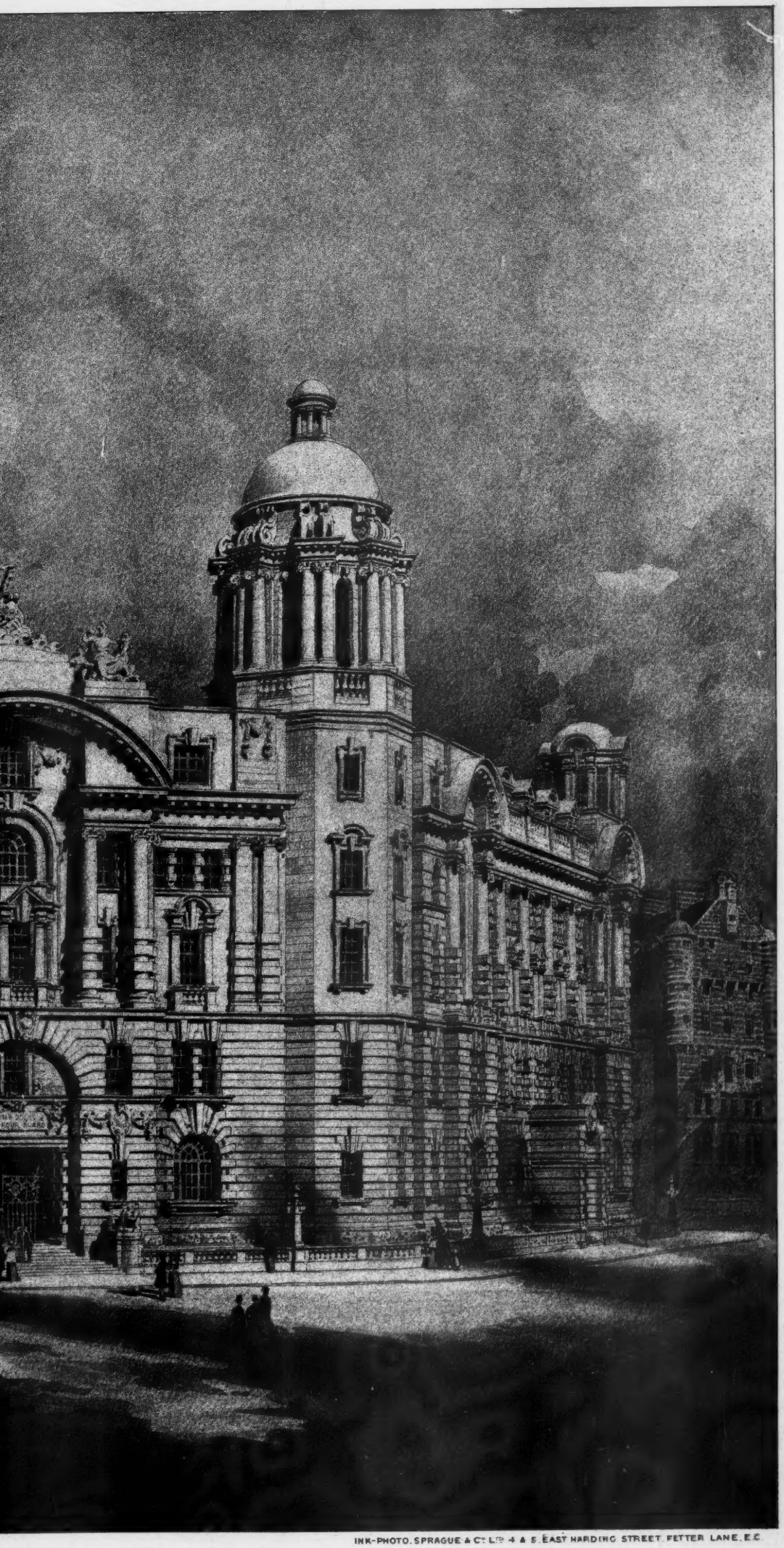


LIVERPOOL DOCK OFFICES COMPETITION: FIRST PREMIATED DESIG

Messrs. BRIGGS & WOLSTENHOLME, F.F.R.I.B.A., F. B. HOBBS, A.R.I.B.A., and ARNOLD T



L DOCK OFFICES COMPETITION: FIRST PREMIATED DESIGN. PERSPECTIVE VIEW
ES & WOLSTENHOLME, F.F.R.I.B.A., F. B. HOBBS, A.R.I.B.A., and ARNOLD THORNELY, A.R.I.B.A., ARCHITE



INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

CTIVE VIEW.

I.B.A., ARCHITECTS.

SOLICITORS DEPARTMENT — PRINCIPAL ACCOUNTANTS DEPART.

SOLICITORS DEPARTMENT — PRINCIPAL ACCOUNTANTS DEPART.

BOARD AND COMMITTEE ROOMS

AUDITORS DEPARTMENT

Chairmans Room 29·0 x 16·0

Committee Room No 2 29·0 x 16·0

Committee Room No 3 29·0 x 16·0

Committee Room No 4 29·0 x 16·0

Committee Room No 5 29·0 x 16·0

Luncheon Room 29·0 x 28·0

Committee Clerks Lunching Room 23·0 x 23·0

Waiting Room 20·0 x 15·0

Waiting Room 20·0 x 15·0

Engineer in Chief 27·0 x 25·0

General Manager 27·0 x 25·0

General Manager's Room 23·0 x 23·0

Assistant Secretary's Room

Solicitors Private Room 24·0 x 24·0

Assistant Solicitor 20·0 x 15·0

Witnesses Room 19·0 x 12·0

Chief Clerks Room 19·0 x 12·0

Strong Room 12·0 x 10·0

Library and Waiting Room 25·0 x 15·0

General Office 44·0 x 24·0

Typist

Principal Clerk

Pilotage Clerks

Messenger

Counter

General Clerks Office

Principals Private Room 20·0 x 18·0

General Office 31·0 x 29·0

Auditors Private Room 21·0 x 15·0

Commissioners Room 31·0 x 14·0

Strong Room 27·0 x 22·0

Drawing Table

Estates and Rating Department 31·0 x 22·0 Clerks

Principals Private Room 23·0 x 14·0

Enquiry

Stationery 31·0 x 15·0

Strong Room 3 Floors 18·0 x 11·0

Private

Stairs up to Stationery Store

Stairs from Stationery Department

From Underlying Cellar

Stationery Store

Emergency Staircase

Emergency Staircase

Ante

Hall Clerks Lavatory

Central Hall

Up

Ventilator Lobby

Passenger Lift

Principals Lavatory

Ladies Lavatory

Corridor

Ante

Ante

Ante

Ante

Waiting Room

Waiting Room

Gentlemens Lavatory

Ladies Lavatory

Emergency Staircase

Waiting Room

No 1.

No 2.

No 3.

Copying Letters

Typewriter and Telephone Room 10·0 x 14·0

Committee Clerks 66·0 x 44·0

Office

Assistant Secretary's Room

No 4.

No 5

No 6

No 7

General Office for Writing

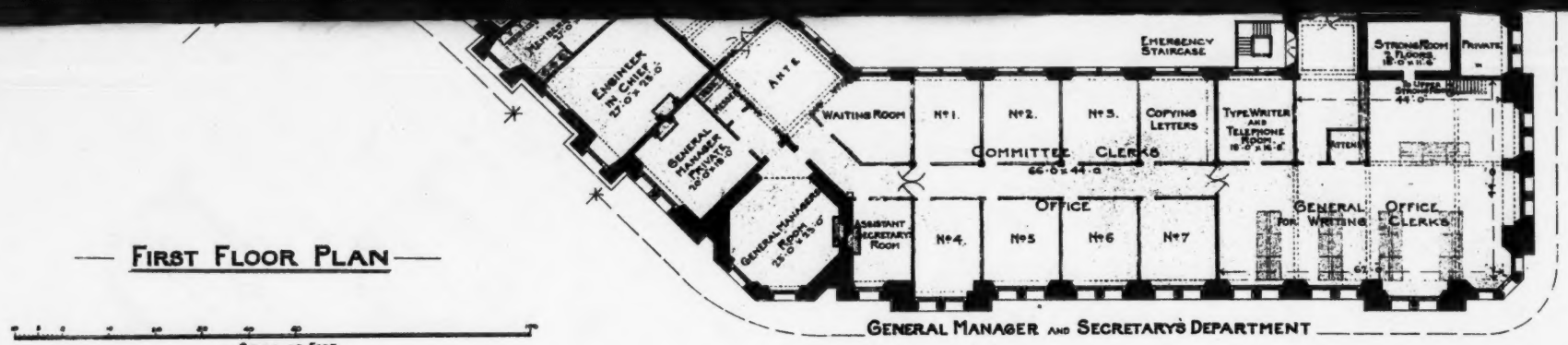
Office Clerks

Entrance

Counter

Counter

Counter



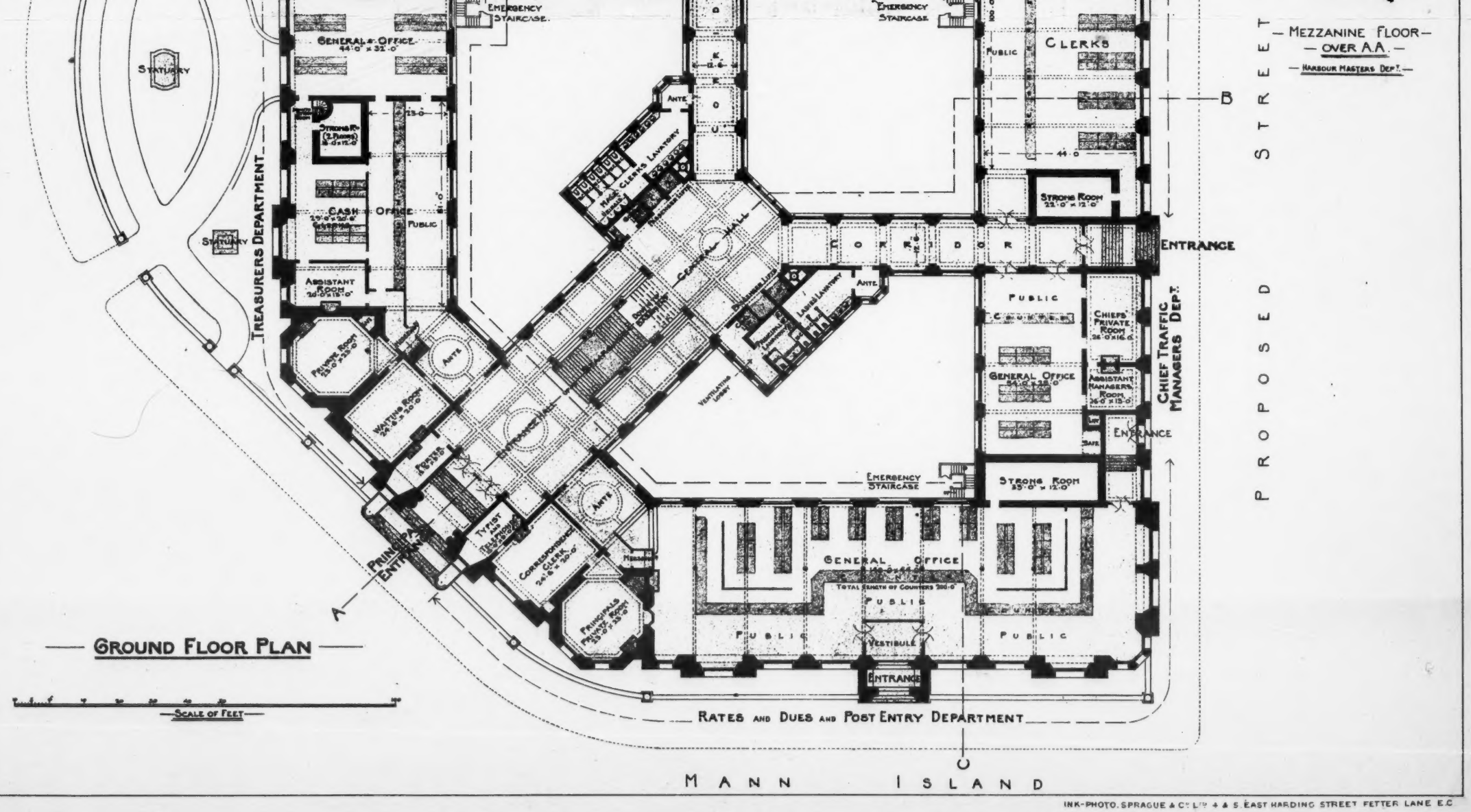
— First Floor Plan —

— Scale of Feet —

— Mezzanine Plan —

General Manager and Secretary's Department

— Mezzanine Floor —
— over A.A. —
— Harbour Masters Dept. —



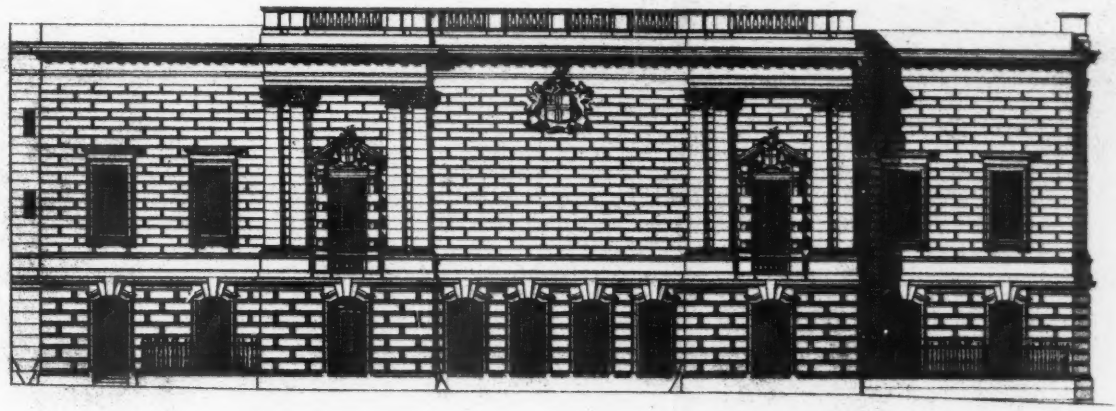
GROUND FLOOR PLAN

SCALE OF FEET

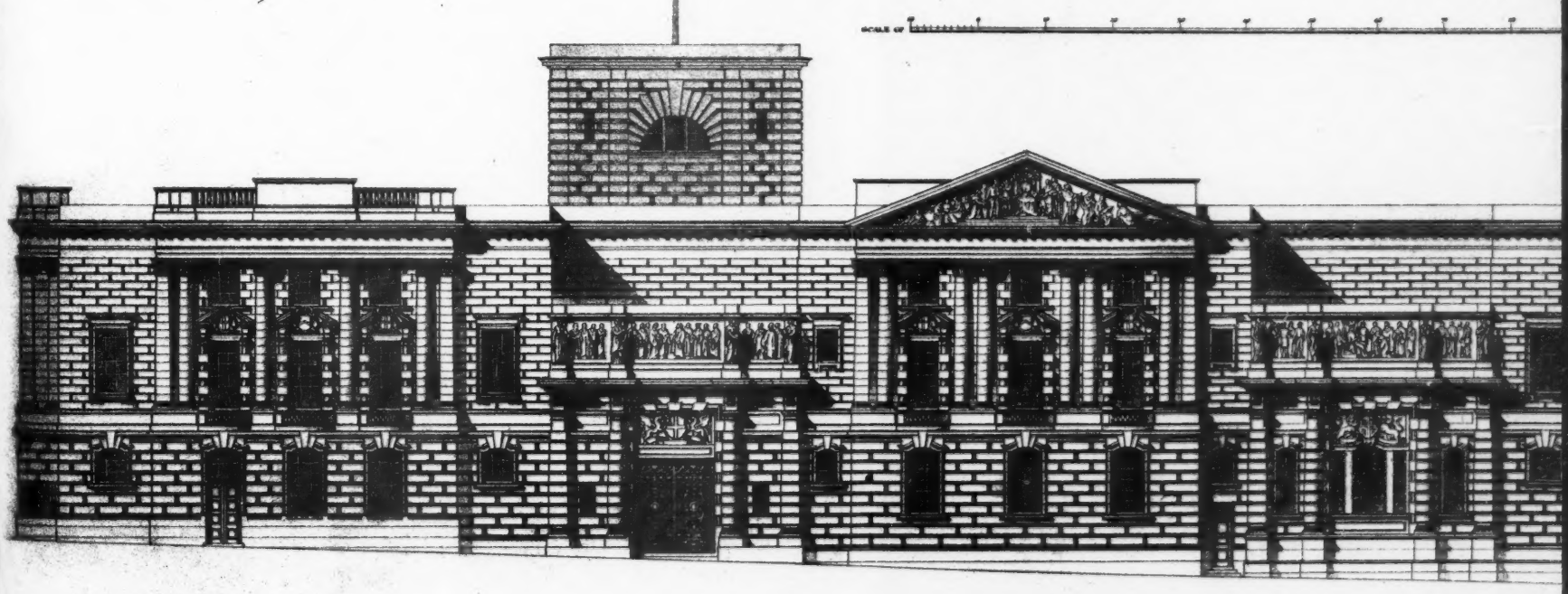
INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C

LIVERPOOL DOCK OFFICES COMPETITION: FIRST PREMIATED DESIGN. PLANS.

Messrs. BRIGGS & WOLSTENHOLME, F.F.R.I.B.A., F. B. HOBBS, A.R.I.B.A., and ARNOLD THORNELY, A.R.I.B.A., ARCHITECTS.



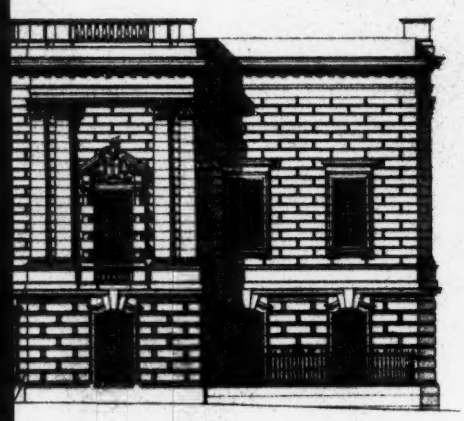
ELEVATION TO NEWGATE STREET

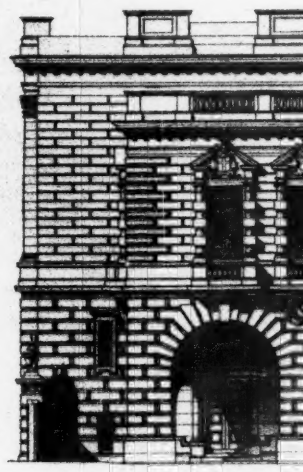


ELEVATION TO OLD BAILEY

OLD BAILEY SESSIONS HOUSE COMPETITION.—Design submitted by Mr.

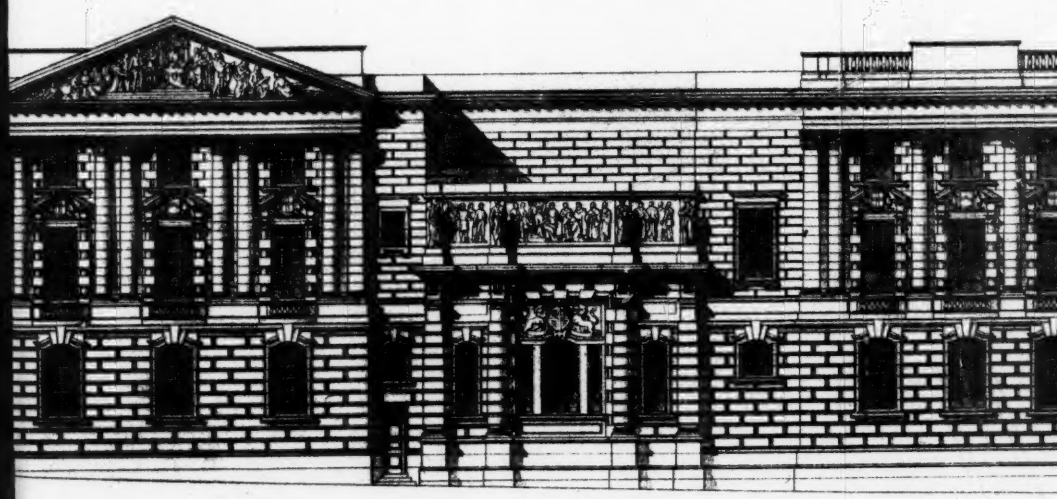
ELEVATIONS.





STREET

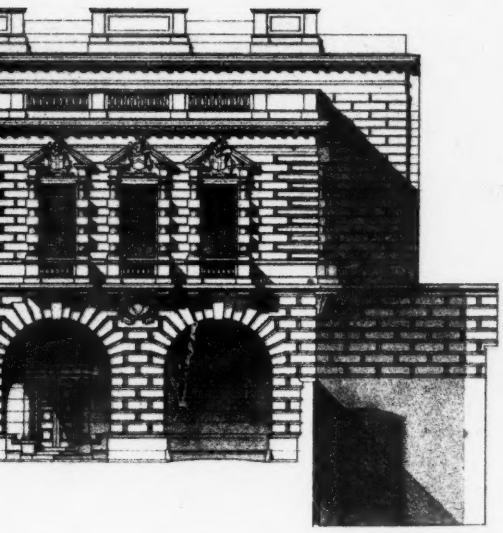
SOUTH E



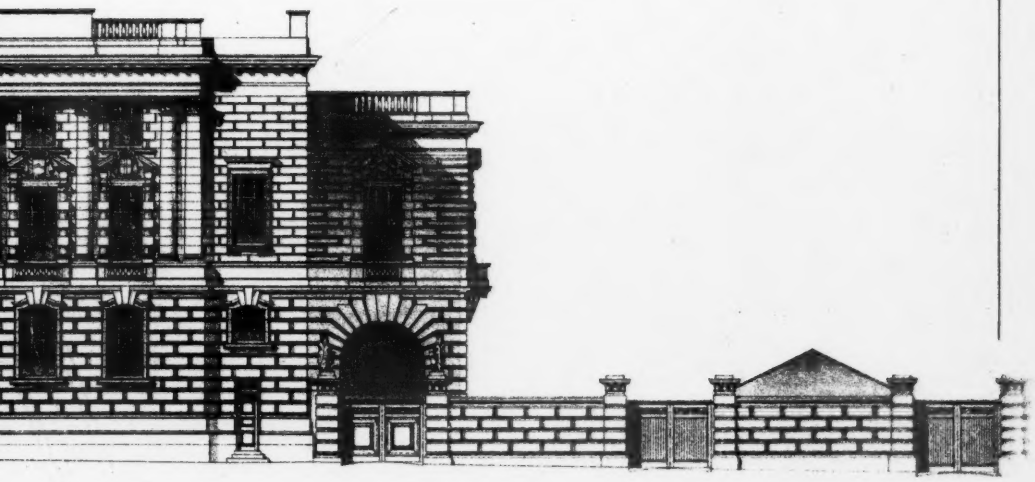
EVATION TO OLD BAILEY

EY SESSIONS HOUSE COMPETITION.—Design submitted by Mr. F. T. Baggallay, F.R.I.B.

ELEVATIONS.



SOUTH ELEVATION



INK-PHOTO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE E.C.

LAY, F.R.I.B.A.